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Information &  
Telecommunication  
Technology in  
Montana  
State  
Government

A Report of:  
Agency Information  
System Plans  
for Fiscal Years  
1994-95

PLEASE RETURN

The Department of Livestock maintains over 26,000 computerized brand images for the Livestock Brands System. To discover how the database of brand images helps protect livestock owners and reduce management costs, see "Computerized Images Authenticate Brands."

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**INFORMATION AND TELECOMMUNICATION TECHNOLOGY  
IN MONTANA STATE GOVERNMENT**

---

Published by:

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TO: Technology Report Readers  
FROM: Sharon Ranstrom Manager  
Computing Policy and Development Unit  
DATE: January 15, 1993  
SUBJECT: Technology Report Error

Enclosed is a copy of Department of State Lands Plans and Accomplishments page which was inadvertently omitted from the *Information and Telecommunication Technology in Montana State Government report.*

Enclosure

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# **State Lands**

## **FY94-95**

Provide continued support for the Trust Land Marketing System and the Fire Protection Assessment System.

Interconnect the agency's three local area networks, and expand the dial-in capabilities for personnel on travel status.

Increase use of the agency's two GIS systems: the Forestry Division's Integrated Resource Information System (IRIS), and the Reclamation Division's NRIS -based Powder River Basin Project.

## **FY96-97**

Complete replacement of all remaining PC-XT's.

## **Accomplishments**

*Implemented GIS at two sites: 1) IRIS system in Missoula, Forestry Division, is being used for forestry timber stand analysis; and 2) The NRIS system in the Reclamation Division, Helena, is performing cartography for reclamation of mine sites.*

*A full-page scanner with optical character recognition was purchased by the Reclamation Division and is being used to input maps and graphical material used in environmental assessments and EIS's.*

*14 unit offices were connected to the State's telecommunication network and provided with PSPC E-mail and file transfer capability. The whole department is now linked via E-mail and the Helena mainframe.*

*Modified the production report section of the Trust Land Marketing System to increase accuracy and efficiency and more closely emulate the daily operations performed by the staff.*

*Implemented an automated system to produce Trust Land lease information on pocket notebook pages for use by field personnel. This replaces the manual typing of these pages, saving clerical time and eliminating typographical errors.*

*The Department purchased 80 new microcomputer systems, for a total of 216. The Helena airport facility and a portable PC used by a staff person who spends considerable time on the road were linked via modem to the LAN at the main office, allowing both to send and receive E-mail, transfer files, submit drafts to the secretarial pool for typing, etc. We hope to extend this tie-in to more of the field and traveling personnel.*



# Foreword

This report of Information and Telecommunication Technology in Montana State Government is published every two years, to provide an overview of current and future uses of technology in state government. As Montana faces serious fiscal problems, technology continues to enable improved delivery of service.

Examples of how technology is currently being used to serve the public are summarized in the *Technology Serving Montana Citizens* section.

---

## A Report of Agency Information Systems Plans for FY1994-95

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Montana's investments in computing and telecommunications have resulted in an impressive array of systems and networks, through which virtually all government services are accomplished. The *Technological Infrastructures for the 1990's* section gives the reader a good overview of these systems with a look toward what is to come in the next five years.

For the first time, the *Agency Plans and Accomplishments* section of the report contains agency projections for major projects into the FY96-97 biennium, as well as agency plans for the FY94-5 biennium. Agency accomplishments during the current biennium are also reviewed in this section.

The Department would like to thank each of the agencies that participated in the preparation of this report.

Jeff Brandt, Tony Herbert, Dave Marshall	Administration
Sharon Ranstrom, Paul Rylander, Mike Trevor,	
Martha Johansen	
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Madelene Cottrill	Public Service Commission
Jack Ellery, Brenda Haseman	Revenue
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Dennis Sheehy, Dana Corson	State Auditor
Judy Simpson	State Fund
Wally Jankowski	State Lands
Dennis Burke	Transportation
Dr. David Toppen	University System

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## Acknowledgements

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# **Executive Summary**

Government agencies rely on the basic foundation of technology to carry out their mission. This foundation, or infrastructure, includes voice and data communications systems, automated information systems, and computer systems. Many state agencies have implemented systems or projects which significantly improve the services provided to the citizens of Montana. The *Economic Assistance Management System* - (TEAMS), is said to be "the most major change in service delivery for welfare in Montana in at least 50 years". "*Geographic Information Systems (GIS) in Libraries*" was the first service of its kind in the nation. The *Livestock Brands System* safeguards Montana's brands and livestock producers' assets. Job Service Kiosks will provide job seekers with information about job openings at a variety of public locations. The *Montana Educational Telecommunications Network (METNET)* links schools and universities across the state to deliver distance learning. Motor vehicle registration and titling are easier and more accurate with all counties using the automated *Motor Vehicle Registration System*.

The State Telecommunications Network (STN) is one of Montana's greatest information technology strengths and will be the basis upon which future technology initiatives are developed. During the next five years, state government will become more reliant on telecommunications. There will be a major challenge to provide higher speeds, more flexibility, and increased functionality, while maintaining current effectiveness and reliability. Increased demand will dictate growth in facilities as agencies perform their duties more effectively using telecommunications.

Video networking is one of the leading telecommunications initiatives for the 1990's. Interactive video systems offer tremendous distance learning opportunity and provide the potential for dramatic travel savings when used for interactive video conferencing. In addition to video conferencing, wide area networks, local area networks, bulletin board systems, local and long distance circuits and contracts, telephone systems, 9-1-1 emergency telephone service, and land-mobile radio systems are in use in Montana state government. Major telecommunications initiatives and emerging technologies include distance learning networks, voice response systems, cellular/wireless systems, and multi-protocol data networking facilities.

The state's technological infrastructure includes a substantial inventory of computing systems. A significant portion of this inventory includes automated information systems and computer systems which are well established and have been used by state agencies for many years. These include statewide administrative systems, agency systems, and automated office support systems. During the next five years, use of these systems is expected to increase at rates comparable with the past five years. Demand for more function, integration, ease of use, accessibility, and rapid response time is expected.

Advances in distributed computing capabilities, both as a result of network facilities and desktop computing, have resulted in tremendous growth in the inventory of automated information systems and mid-range and personal computer systems. Word processing and spreadsheet use is common among state workers. A need to electronically exchange these documents has been recognized, and enterprise electronic mail (E-mail) has been one of the most active recent initiatives in the automated office support area. Graphic user

interface and calendaring capabilities are also being used by many state workers. During the next five years, the standards established for these systems are expected to remain stable and use of the systems will continue to gradually increase as more workers have computers on their desks.

Initiatives and emerging information system technologies include data sharing, imaging, and multimedia. Of these, imaging has the greatest potential to significantly change the workplace in the next five years. In order to fully realize the tremendous benefits of imaging technologies, considerable investment will be required, strong innovative leadership will be needed, and, at times, complete changes in organizational structures will be demanded.

Because of the growing strategic importance technology plays in the delivery of government services, policy issues abound as the state moves forward. These issues include network access, funding technological initiatives, enterprise requirements, personnel recruitment and retention, and contingency planning.

Working advisory groups, the Data Processing Advisory Council (DPAC) and Data Processing Managers' Group (DPMG), have recently addressed a number of policy and tactical issues including network topology, disaster recovery, product and service selection and cost, and budget priorities. During the next five years, it will be imperative for these groups to be active in the formulation of strategic and tactical planning and policy development.

One of the keys to improving services to the public in the future will be to properly recognize, manage, and use technology within state government. Technology has the potential to lower the cost of providing required services, and during the 1990's, state government should look to information technologies as being part of the solution to some of Montana's problems. Results should be expected as information technology systems are deployed.

## New State Welfare System Delivers Benefits

The Economic Assistance Management System (TEAMS) is said to be, "the most major change in service delivery for welfare in Montana in at least 50 years." Each county welfare office uses the system for determining eligibility for Aid to Families with Dependent Children (AFDC), food stamps and medical assistance programs.

There are over 300 people located through the state that use the system on a daily basis. It is their primary tool for delivering benefits to people in need.

The process of calculating a person's income and determining eligibility for economic assistance is very complex. Each case is unique and rules are constantly changing. TEAMS is designed to eliminate manual calculations and reduce multiple forms. In a recent survey, an eligibility specialist commented, "The system is much more accurate and accountable."

By cross checking client records from around the state, TEAMS prevents people from making duplicate benefit applications. Management control of economic assistance is improved through comprehensive reporting, uniform application of policy and linkages to income tax and other records. Soon the system will be linked to the Child Support Enforcement system to help collect child support payments.

TEAMS will be the vehicle for managing increasing caseloads and insuring responsiveness to the needs of low income persons. Caseworkers have found that they can be more productive, and "it is faster for the clients to receive benefits and a good tracking system."

The system is the result of cooperative efforts on the part of two federal agencies, three independent contractors, several state agencies, and 56 counties -- a real TEAM effort!



---

*"It is quick. Information can immediately be shared with other counties and states. The system figures the benefits so errors should be decreased".*

---

"TEAMS is one of the few systems of its kind in the nation to come in on time and under budget."

Development and Implementation Cost:

Budgeted - \$12.8 Million; Actual - \$10.4 Million

Federal Participation Rate: 85%

Cost to General Fund: \$1.62 Million

# Library Users Able to Create Maps



The Montana State Library is at the forefront of providing the public with the ability to create their own maps. The Natural Resource Information Systems (NRIS), a program administered by the State Library, has recently obtained partial grant funding for providing computerized mapping technologies to ten Montana libraries.

Using Geographic Information Systems (GIS) the State Library produces maps of rivers, monthly drought conditions, vegetation, geographic features, census data, legislative districts, superfund sites and any other map related data. The body of information which they have developed is extensive and has many potential uses in the private and public sectors.

GIS computer technologies are costly and require considerable skill to operate. These factors have created barriers to wide spread application. Recently with the advent of new software called ArcView™, which operates on a personal computer, the learning curve has significantly decreased. ArcView™ functions like a card catalog of maps. Users can, with minimal training, access extensive databases and create and print out the maps they need.

---

*"We believe GIS, in particular ArcView™, can help all libraries give Montanans equal access to information, regardless of their income, home town, or technical skills."*

---

The first station has been installed at the State Library, and the goal is to place the system in ten more libraries throughout the state within the next year. Additional grant funding is being sought to buy necessary hardware. When it is implemented, users will be able to combine different maps, such as population distribution or transportation routes, to create new maps.

Local governments may want to use the system to site new business locations, study growth patterns of a region, or analyze zoning changes. Natural resource information will be available for people to study the impacts of development projects. With demographic information businesses can develop target markets.

This project, "GIS in Libraries", was the first of its kind in the nation. Montana citizens will have "no cost" access to a planning tool to explore their world in powerful new ways.

## Available Databases:

- World
- US
- Montana
- Census
- EPA Superfund
- Drought Conditions
- Rare, threatened or endangered plants, animals and communities
- Research Natural Areas
- Recreation
- USGS Maps
- Precipitation
- Streamflow
- Groundwater Monitoring
- Aquifer Assessment Basins
- Hydrography
- Roads
- Counties
- Mineral Industry Locations
- National Forests and Parks

## Computerized Images Authenticate Brands

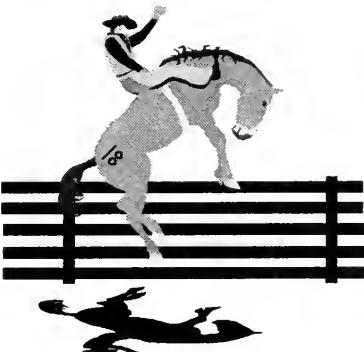
A brand is a source of pride for many Montana ranch families -- it is their identity. When a fence is down and the cows are out, neighbors use brands to sort their livestock. Livestock producers rely upon their brands to protect their investment and prove ownership.

Each year at 15 livestock markets around the state, approximately 600,000 cattle and 10,000 horses are sold. Each animal is inspected upon sale to insure that the seller has clear title. Brand inspectors verify ownership by comparing an animal's brand with a picture of the brand. When they match, inspectors review ownership and mortgage records to insure passage of clear title to new owners.

The Livestock Brands System is the official registry of all Montana brands. The Department of Livestock recently digitized 26,000+ brands, and plans to enhance the Brands System by displaying an image of the brand on computers used at livestock markets. The accuracy of the inspection will improve as inspectors will be able to visually match the actual brand with the brand's computer records.

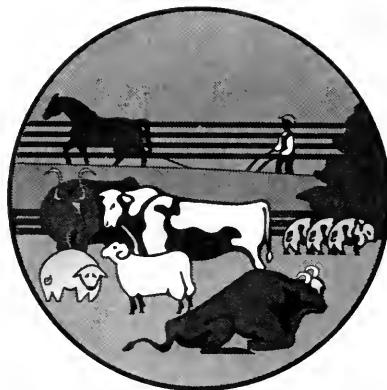
Every ten years livestock producers are required to rerecord their brands. Part of this process involves mailing a notice to each of the over 64,000 registered brand owners. (The same brand may be recorded more than once depending upon its location on an animal.) Certificates are sent back to the producers that rerecord their brands. A drawing of the actual brand must appear on both the rerecord notice and the certificate.

Now that all brands are stored in a computerized form they can easily be printed on brand certificates and rerecord notices by the computer. Since staff no longer have to manually apply brand stickers to each certificate, brand owners receive their certificates quicker and the state has saved personnel costs.



A new brand "bible" has been developed as a directory of all brands. By sorting the brand image file before printing, the bible can be printed in "brand-a-betical" order.

The Department of Livestock's Brand System safeguards Montana's brands and livestock producer's assets by preventing duplication of brands and insuring that each brand is unique.



---

*Each year at 15 livestock markets, approximately 600,000 cattle and 10,000 horses are sold.*

---

## Job Seekers Find Openings at their Fingertips



*"Kiosks put job information where it should be .... at your fingertips".*

Self service information booths are going to be installed in eight public buildings in Montana. Each information booth or kiosk will be designed to search state and national databases for job listings -- by touching a computer screen to make selections. A video will guide each step.

The Department of Labor received a grant in April 1992 to pilot Touchscreen Kiosks for matching job seekers with job openings. The kiosks are currently planned to be installed in each of the following cities: Billings, Circle, Deer Lodge, Great Falls, Helena, Missoula, Ronan, and Whitefish by June 1993.

A pleasant voice will guide applicants to the information they need. People who have never used a computer will find they can easily search for job openings. After selecting the type of job and the geographic area, a list of jobs will be displayed. The job descriptions, pay scale, and qualifications will be displayed on a monitor and can also be printed and used to apply for specific jobs.

The Job Service Kiosks will provide much needed service to Montana's rural population and to working individuals who have difficulty getting to the local Job Service offices during business hours. By making job information more accessible, the Department of Labor hopes to improve its ability to match applicants with employers.

The kiosks, which include a laser disk for video images, will access the state job database and a subset of national listings which are available through the Interstate Job Bank.

Eventually, the touch screen systems could be expanded to deliver additional job-related or other state services such as unemployment information, voter registration, or hunting and fishing regulations. The idea of delivering state services through computer technologies that are easy to use and conveniently located holds much promise.

Eight Job Service Kiosks to be installed by June 1993 in:  
Billings, Circle, Deer Lodge, Great Falls,  
Helena, Missoula, Ronan and Whitefish  
Providing access to approximately:  
1300 Montana job orders and 10,000 national jobs

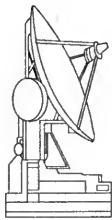
# Distance Learning a Reality with METNET

The Montana Educational Telecommunications Network (METNET), a cooperative venture between the Office of Commissioner of Higher Education, the Department of Administration, and the Office of Public Instruction, has linked schools and universities across the state to deliver upon the promise of distance learning. Regional training centers in fifteen locations serve as the focal point for educators to receive in-service training on how to use computers and satellite receive equipment, and as local access points for a computer based bulletin board system.

Using electronic bulletin boards, teachers and administrators are able to communicate with their peers across the nation to keep abreast with the latest developments in their field. Teachers can sign on to the regional bulletin board from their computer. They can select from over 120 conference areas to send messages back and forth with peers throughout the state, the nation, or the world. Each night METNET's central computer dials each regional computer, uploads the local messages and passes them on to the other regions.

Through matching grants, schools and universities have been able to purchase satellite receivers and dishes, modems and telephone lines, video cassette recorders and televisions to set up local distance learning centers. As a result there are over 250 satellite receive dishes located throughout Montana schools. They can receive nationally broadcast courses or "Made in Montana" courses like the *Montana Water Course* through the university system's satellite uplink facility at Montana State University.

Two-way compressed video conference/instruction facilities have also been installed in Helena and Bozeman to communicate with the university system sites in Missoula and Billings. The conference centers are equipped with sophisticated video and audio equipment so that participants can interact verbally and visually. Since the facility in Bozeman is co-located with the satellite uplink facility it is possible to transmit video conferences to a satellite and make them accessible to satellite receive dishes across the state.



With METNET the possibilities are limitless for development of Montana specific courses, for broadcasting important public hearings, for employee training, and for gaining access to high quality nationally developed courseware. METNET is sponsored by private businesses and the state of Montana to develop Montana's telecommunication capabilities to further enhance economic development, education and local government services.



---

*Electronic bulletin boards, satellite dishes, and two-way video systems team up to offer distance learning.*

---

# Online Motor Vehicle Registration in all Counties



**Fast, accurate titles and registrations are available in all 56 counties.**

Registration and titling are easier and more accurate now that all counties have been added to the automated Motor Vehicle Registration System. The system is used to distribute motor vehicle taxes and registration fees to the state of Montana and the various taxing entities within each county.

Previously, only 13 counties (those with the most vehicles registered) were automated. All other counties relied upon manual procedures to complete registration receipts, which were then mailed to the Title and Registration Bureau in Deer Lodge.

Since July 1992, 43 counties and the GVW Division of the Department of Transportation have been automated and the equipment in the original 13 counties was updated. This expansion provides all Montana citizens with equal access to registration services. Transferred titles or re-registrations are updated on the system immediately, eliminating the need for Registration Bureau staff to key the documents -- allowing the reduction of 12 FTE through attrition.

The project laid the foundation for closer cooperation and communication between state and county government. As new equipment was installed, approximately 250 county registration clerks and County Treasurers were trained by the Motor Vehicle Division, Training and Information Unit.

Electronic mail capability was provided to each county. 400-500 messages are sent each day, significantly reducing long distance phone calls. It is used for everything from ordering plates and tabs, to distributing titling policy changes.

Inquiries such as the availability of a particular personalized plate can be answered immediately since each county has online access to the database. Before it might have taken several days for a response from Deer Lodge office.

One of the most significant aspects of the instant record update is that current and more accurate information is immediately available to any requesting law enforcement officer.



There are over 900,000 vehicles registered in the State of Montana.

# Technological Infrastructures for the 1990's

## State Telecommunications Network

The State Telecommunications Network (STN) is a private line network capable of providing voice, data and video communications to agencies of government throughout the State. The STN currently serves state agencies, education, local government and law enforcement. The STN is built on leased facilities from telecommunications companies in Montana and a State owned microwave between Helena and Bozeman. This network currently supports telephone communications between 19 telephone switches as well as data communications between government agencies located in all 56 county seats. Further, the STN now manages two-way, interactive video communications between four cities. It also supports two-way radio communications and FM radio broadcasts (KUFM) from Missoula to Helena and Great Falls.

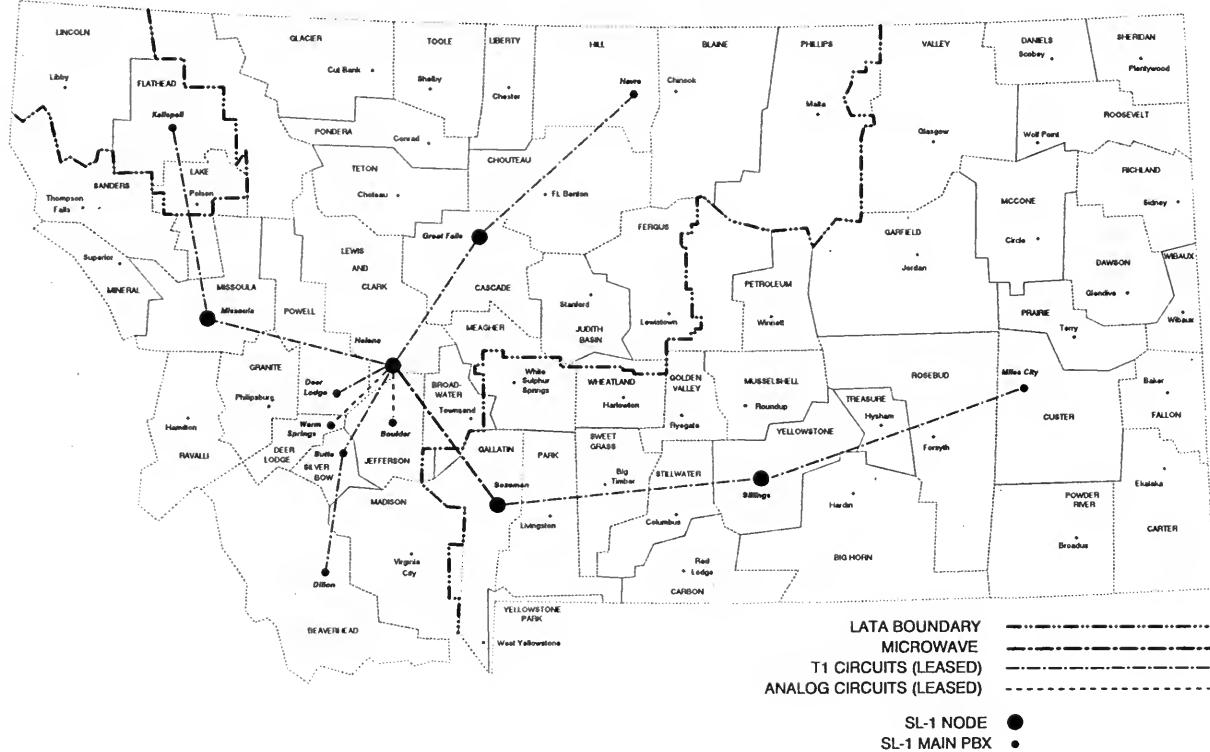
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*STN supports agency voice, data, radio and video communications needs*

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### STATE TELECOMMUNICATIONS NETWORK (STN)

November 1992 Issue



**STN is one of Montana's greatest information technology strengths**

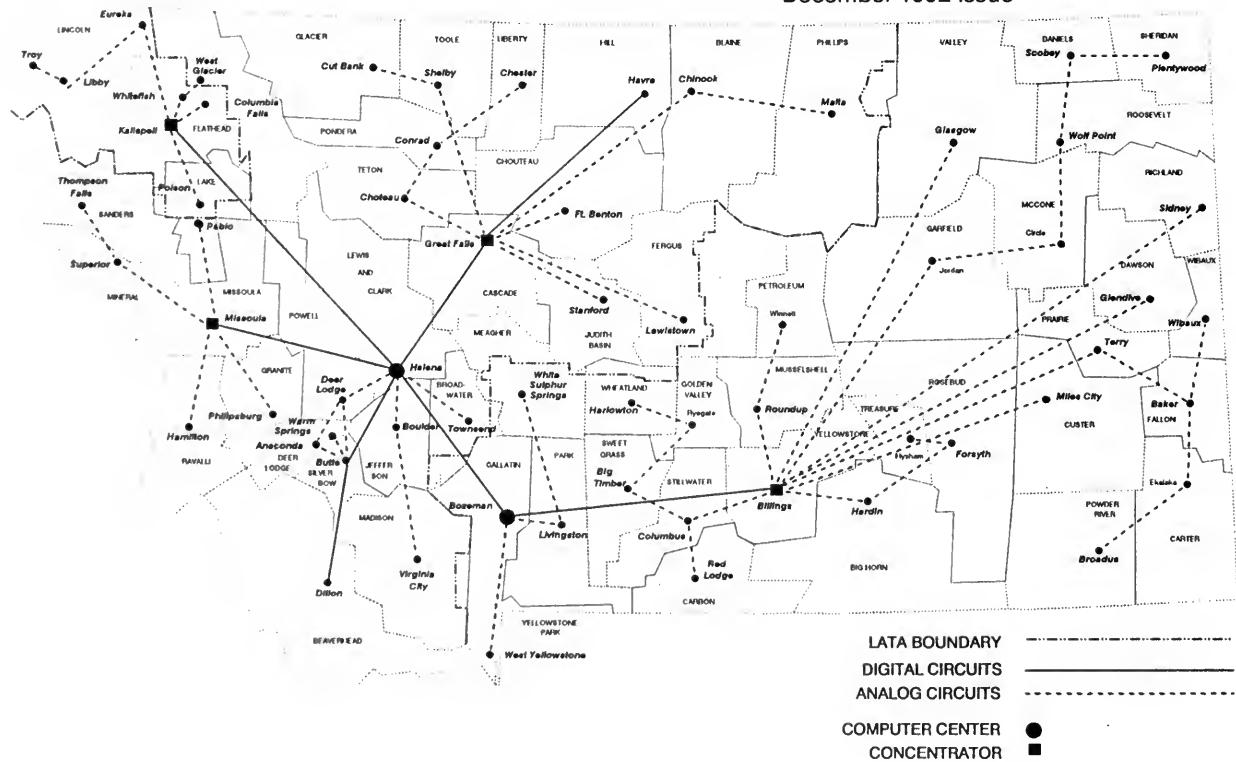
**Increased video, data and telephone needs cause network capacity growth**

This single network is one of Montana's greatest information technology strengths. Substantial savings have been, and will continue to be, realized through the economies of scale of managing one network for all agencies, including the university units. It is expected that the network will continue to expand substantially over the next five years due to increased video, data and telephone use. The network will not only reach out to more cities for voice and data traffic, but will continue to expand for video, two-way radio and wireless transmissions and for broadcast radio and public TV signals. The combination of all of this pressure will drive the network capacity up substantially. In fact, it is anticipated that in the 95 biennium the State will manage its first DS-3 facilities (28 T-1's or the equivalent of 672 simultaneous telephone calls) as a critical component of the network.

The following sections describe activities underway and projections for important telecommunications initiatives including: Data Networking; Voice Networking; Video Networking; Public Safety Communications; and Strategic Telecommunications Initiatives and Emerging Technologies.

## STATE DATA COMMUNICATIONS NETWORK (DCN)

December 1992 Issue



## **DATA NETWORKING.**

Data Networking is a critical, and complex, piece of the state's overall communications strategies. One of the fastest growing communications areas, computers are communicating with one another more and more, and agencies are more reliant on this capability. This section deals with initiatives in data communications throughout state government in each of the following: Wide Area Networks; Local Area Networks; and Bulletin Board Systems.

**Wide Area Networks.** Most of the State's computers are connected across the State through the dedicated, leased facilities of the State Telecommunications Network. The STN is most appropriate for high speed, high reliability, secure, or high use situations. Operating over the STN are two Wide Area Networks (WANs): The SNA network (IBM's Systems Network Architecture), used by most agencies for connection to the state's IBM mainframe, and; Montana's DECNET, used to interconnect DEC computers owned by the university units and certain state agencies. These networks are managed by ISD to serve state agencies and other government units within the State, and to provide connections with selected out of State organizations. Additionally, the Lottery manages a separate network for the sole purpose of operating its on-line lottery.

The primary data network for the state is the SNA network. It links about 4000 devices at 200 sites to the central computer in Helena. The SNA network also interconnects to the Department of Revenue AS-400, the Department of Corrections AS-400 and to the Justice computer at the armory. The network has high-speed concentrators to collect traffic from throughout the state (about 5,000 circuit miles) in Kalispell, Missoula, Great Falls, Billings and Helena. This network is about 15 years old and provides highly reliable, predictable and manageable service to the State. The network is designed to be highly efficient and thus able to operate on cost effective, relatively low-speed, shared data circuits throughout the State. For example, one circuit might serve as many as 15 sites in five cities. This network continues to add over 500 terminals per year, but suffers from its inability to connect agency LANs together across the State in a fast and efficient manner.

The second data network is routed and managed on separate circuits from the SNA network. It is called DECNET, but is referred to by the university units as MUSENET (Montana University System Educational Network). It is about four years old and connects many Department of Transportation offices as well as the six university units. Expansion is predicted to other colleges as well as secondary education sites and possibly other State agencies. The DECNET handles more types of traffic and serves more varied functions than the SNA network. It is therefore more complex, higher cost and has been less reliable than the SNA network (due to its relative youth and limited management compared to the older, larger and established SNA network).

During the next five years Montana will continue to see growth in the applications on these Wide Area Networks. One of the major challenges for the State in the late 1990's will be to attempt to bring together higher speeds, flexibility and functionality of the DECNET environment with the wide availability, cost effectiveness and reliability of the SNA network. The result will be a single, shared, truly universal data network that can allow any computer in the State to connect to any other.

---

*Data networking is one of the fastest growing telecommunication areas*

---

**SNA network links 4000 data devices at 200 sites**

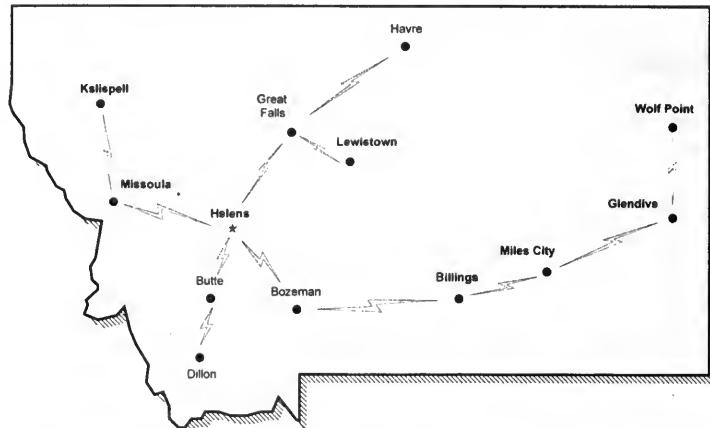
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*DECNET -- called MUSENET by universities -- links campuses, DOT offices, and Administration*

---

*Higher speeds, more flexibility and functionality will be demanded in the next five years*

## State of Montana 802.3 (WAN) / DECnet Network



**Virtually all computers attached to LANs, and 1000 micros added each year**

***Local Area Networks.*** Computers within an office or a building, or within a local campus area, are connected by networks called Local Area Networks (LANs). LANs came into use in the state about 1987 and expanded so rapidly that today virtually all the State's computers are attached to a LAN. They are primarily used to share files, computer software, printers and other resources among many personal computer users. They also collect statewide traffic from a number of computers to be funneled onto the Wide Area Networks.

In 1987 the Department of Administration established the IEEE 802.5 token ring standard for LAN communications within State government. This standard allows a wide variety of hardware and software from many vendors to run on the LANs. Outside of the historically DECNET agencies (the universities, DOT and DNRC), this standard is now virtually universal in State government. From 1987 through 1992 the State added about 1000 microcomputers a year to LANs, and it appears that this pace will continue during the next five years.

**Fiber optic network connects 11 buildings on capitol complex**

ISD manages LANs as shared communication facilities for all agencies located together in an area. For example, ISD manages one LAN in each county courthouse that is shared between State agencies like SRS, Revenue, and Justice as well as county agencies in many cases. This LAN provides each agency shared access to the State SNA network and mainframe. It also makes it technically possible to automate and coordinate their local functions.

In FY92, ISD installed a fiber optic network to 11 buildings on the Helena complex. Although this network is initially intended for only LAN traffic (see below), it will eventually serve voice and video needs in these buildings as well. In FY93 ISD will implement LAN traffic on up to seven of these buildings. Completion of this capitol complex backbone network during 1994 and 1995 will provide capitol complex agencies with a single high speed LAN to meet future LAN connectivity needs for at least 10 years.

**State agencies to rely on LANs to meet mandates during next five years**

During the next five years, LAN traffic will continue to increase. Agencies, and state government as a whole, will become more reliant on these LANs to accomplish their mandated responsibilities. Interconnection to other agency LANs will become more important to agencies. Common products (hardware and software) will continue to be pursued, and agencies will purchase from common contracts to acquire needed products in order to inter-operate. Also during this time, standards in the industry will evolve which will allow for the integration of products from different manufacturers over these LANs.

**Bulletin Board Systems.** Bulletin Board Systems (BBS) are computers (usually microcomputers) that allow people on other computers to use dialup telephone facilities to access them. Once connected, the computers can exchange programs, data and messages. They are used frequently for electronic mail, to distribute software and information, and to operate "conferences" where people leave, read and reply to messages. The Office of Public Instruction operates the largest BBS system in the State, the METNET BBS. It has 15 regional sites that provide educational services to school districts, libraries and other people and organizations involved in secondary and higher education in the State. They also provide overnight links for electronic mail with the Internet national and international research and education network.

ISD offers a central BBS for all State agencies to provide information to the public in the State of Montana. It provides a single 800 number throughout the State as well as a Helena number. Although limited by budget and personnel support constraints, it currently provides a wide variety of information from state agencies. Some examples are the road and weather report, legislative information, agricultural information, and American Disabilities Act (ADA) information.

During the next 5 years, Bulletin Board Systems such as these will continue to find popularity. Access to other networks (MUSENET, INTERNET, etc.) will be achieved partly through these systems. State agencies will work closely together to limit the number of BBS systems deployed, while still meeting the various agency mandates.

### **VOICE NETWORKING.**

The Department of Administration provides agencies telephone service at all sites throughout the State. ISD, in cooperation with the University System, manages telephone switches at 19 sites throughout the State, including four in Helena and six at the University units. In addition, ISD procures and contracts maintenance for telephone key systems for all other agencies statewide.

ISD connects these 19 telephone switches through the facilities of the STN, allowing the State to carry most of its internal traffic on this network, avoiding long distance charges. ISD also maintains a series of contracts with telephone service providers for operator assisted calls, pay phones, and discounted, volume rates on long distance calls.

The State provides local and long distance calling services for students living in the dormitories on five of the university campus's. This program benefits the State by increasing the utilization on its volume contracts and facilities during the evenings and weekends (times when they are least used), thus lowering the per unit cost to all agencies.

**Local and Long Distance Circuits and Contracts.** The STN provides local and long distance calling capabilities for agencies throughout the State. Competitive contracts for digital and analog circuits, intralata toll discount, interstate calling and credit card utilization have been signed with private sector providers.

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**15 BBS sites provide services to schools, libraries, and universities**

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**STN provides telephone service throughout the State**

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**Student use effects lower cost to agencies**

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### ***STN use is 90% voice***

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### ***State facilities save long distance dollars***

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### ***Substantial growth in circuit requirements projected for next five years***

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### ***19 PBX's manage 15,000 state telephones, voice mail, fax, dial-in data, and devices for the deaf***

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Voice traffic comprises 90% of the use of the STN. The State's telephone switching systems are connected together by analog trunks or digital T1 circuits. In addition, each of these switches is connected to U.S. West or the local telephone company for local telephone calls. These dedicated circuits, called local office trunks, vary in number based on utilization patterns.

ISD maintains a contract, currently with AT&T, for some intrastate and all interstate and international telephone calls. This provides the State with substantial long distance savings on calls made from all State facilities, or with a State credit card. In addition, the State uses tariffed access services, and has a contracts with U.S. West for discounts on intralata calls within the State. These contracts, coupled with the capabilities of the STN, result in rates for long distance calling that, in FY93, are 35% below AT&T's daytime rates.

During the next five years, the general growth in voice, data, and video communications needs will dictate substantial growth in these circuit requirements. The state will continue to make arrangements for digital technology where ever feasible. During this time, the state will continue to contract for local and long distance circuits from the industry. The state will only consider the capitalization of transmission systems in instances where substantial long term savings is projected over lease arrangements.

***Telephone Systems.*** The state began the active management of it's own telephone systems in 1982 when it acquired it's first Private Branch Exchange (PBX) at Western Montana College. Since that time, 18 additional PBX's have been purchased at major locations throughout Montana which manage a total of over 15,000 state telephones. These PBX's primarily provide on- campus and local calling, and access to the STN for long distance calling. Additionally, these systems manage fax communications and dial-in data calling, and provide voice mail features, access for telecommunications devices for the deaf, and operator services. The ownership and management of these PBX's has provided substantial savings over alternative lease arrangements.

With the cooperation of the University System, these PBX's have grow to be the critical hubs or "nodes" of the STN. Not only do they manage calling from and to the phones at each location, they manage the routing of calls across the STN. This is done in such a fashion as to maximize the capacity and costs for dedicated inter-city trunks and other long distance programs. The management of these "network nodes" is provided by ISD through contracts with private sector telecommunications companies.

ISD and the University System have maintained these PBX's with common software and hardware releases as improvements have been required. The manufacturer's, Northern Telecom, Inc., upgrade philosophy does not require wholesale replacement of the basic architecture as upgrades are needed. Through this philosophy the state is staying current with technological developments in an extremely economical fashion.

These PBX's not only provide for telephone call management but also manage certain aspects of ISD's Wide Area Networks. SNA and DECNET data circuits are partially managed by these systems on critical routes. Additionally, video images now moving between the METNET Two-Way Video Systems (see Two-

Way Interactive Video Systems discussion) are also controlled and managed through these systems. Through their sophistication the state can continue to achieve savings over other alternatives, and to provide for better management of all network facilities.

During the next five years we will continue to upgrade these PBX's throughout the state to maintain common capabilities throughout the network and to achieve cost savings. During this time we don't anticipate major replacement projects to be required. We do expect the need for modest investment in existing systems in order to meet the demands placed on these systems. These systems will continue to provide the focal point for network management capabilities, as well as telephone systems.

## **VIDEO NETWORKING.**

**Two-Way Interactive Video Systems.** House Bill 30 of the 1991 Legislative Session established the Montana Educational Telecommunications Network (METNET). METNET, through the Office of Public Instruction, the University System, and the Department of Administration, calls for the coordination of the deployment of telecommunications technologies to provide for distance learning opportunities in Montana. A key piece of METNET technology is the creation of two-way interactive video systems at distant cities and towns throughout the state. In 1992, METNET and the University System installed two-way interactive video systems at four sites: Helena, Bozeman, Missoula, and Billings. The video systems utilize the STN to carry the video image and audio signal between locations. The system will be used primarily for the delivery of classroom instruction and in-service training for teachers. As the infrastructure is deployed to geographically distant parts of the State, it has the potential to be of significant benefit to State government for interactive video conferences, dramatically reducing travel costs.

In FY 1993, additional equipment will be installed at the community colleges in Miles City and Kalispell. The addition of the Miles City location will allow the METNET Video Network to inter-connect with the Mid Rivers Fiber Optic based video network already in place in Eastern Montana. This will allow the METNET Video Network to extend to Glendive, Sidney, and to other locations served by the Mid Rivers system. Over the next five years, METNET will continue to deploy Video Network equipment to up to a total of 14 sites. This will include Great Falls, Havre, Butte, Dillon, Lewistown and three, yet to be determined, rural sites. As this technology evolves, the State of Montana will be well positioned to incorporate advancements in the field of Video Conferencing into our existing network.

During the next five years, we expect the use of these systems to grow substantially. The use of two-way interactive video will become more accepted by educators and agency administrators. With this increased usage will come a shift, to some unknown degree, of agencies budgeted expenditures from travel to communications. Price reductions in the cost of the equipment required for these systems are anticipated. As digital technology continues to be deployed in the public switched network, systems should be implemented at new locations at a relatively lesser expense.

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*PBXs are focal point for network management and telephone systems*

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*Distance learning opportunities provided by METNET*

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*Two-way interactive video to be installed at fourteen sites in next five years*

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*Interactive video will be more accepted by educators during the next five years*

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*Over 250 satellite systems are installed in Montana schools and universities*

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*State will originate courses for transmission via satellite*

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*9-1-1 accessible to over 80% of state's population*

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**Satellite Capabilities.** Primarily for education, but suitable for other agency use, satellite communications offer one-way receive access to distant instructors as well as access to a plethora of existing programming. As one of its first goals, METNET has actively pursued the deployment of satellite receive technology at various K-12 schools and university units. The METNET project has established a cooperative purchase term contract for C and Ku band satellite receive dishes for schools in the State. The five year goal is to locate as many satellite receive dishes at the State's schools as there are interested participants. To date, there are over 250 satellite systems installed at K-12 schools and University units.

The Commissioner of Higher Education's Ku band uplink/transmitter, located at MSU in Bozeman, provides an origination point for in-state satellite video programming. This technology is compatible with the satellite receive dishes that have been installed at schools throughout the State. The uplink/transmitter equipment provides an inter-connection to the METNET Video Network, allowing any user the ability to send programming over Ku band Satellite to any Ku band satellite receive dish in the State. The Ku band satellite uplink/transmitter is a critical element of a strategy to originate more in-state programming and educational courses over the next five years. In 1992 the satellite uplink/transmitter was used to deliver the Montana Water Course statewide to K-12 schools, and by several State Agencies to deliver statewide policy and training programs.

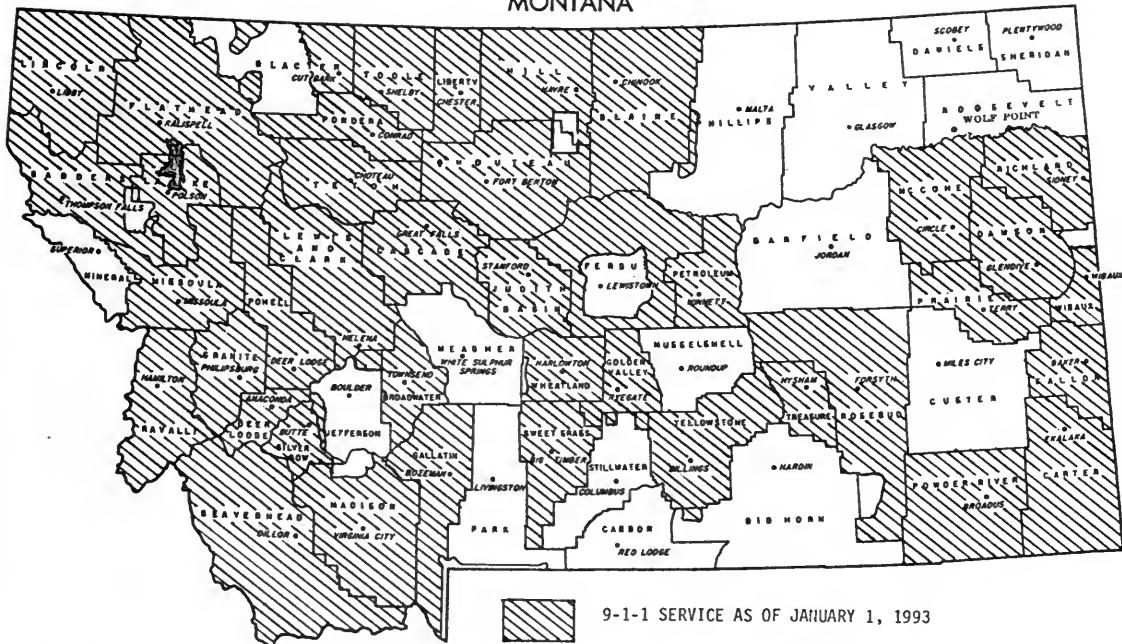
During the next five years, satellite communications originating over the Ku Band uplink will increase, and schools and universities will receive more programming on downlinks. Educational, training, and public service broadcasts originating at two-way interactive sites will be carried to the uplink, transmitted to satellites, and received by METNET receive sites.

### **PUBLIC SAFETY COMMUNICATIONS.**

Public safety communications activities, including 9-1-1 emergency telephone systems and land mobile radio systems, continue to expand throughout the state. The following discussions describe the major activities in both of these important public safety areas.

**9-1-1 Emergency Telephone Service.** The Statewide 9-1-1 Emergency Telephone System Program has been in place since January, 1987. The account generates on the average just under \$1.1 million per fiscal year. These funds are used for the planning, implementation and operation of emergency telephone systems using 9-1-1. As of January 1, 1993 there will be forty- two, State approved, 9-1-1 emergency telephone systems available for public use throughout the state. Approximately eighty-three percent of the state's population in forty-one of the state's fifty-six counties are served by these systems. Twelve additional areas are actively planning for 9-1-1 implementation.

## MONTANA



9-1-1 SERVICE AS OF JANUARY 1, 1993

The public's perception of 9-1-1 emergency telephone service is largely influenced by the proliferation of popular television programs portraying the delivery of emergency services. These programs generally depict systems which are more sophisticated than most of the emergency telephone systems in Montana. Most of the state's systems provide only minimum service, where emergency callers do not have to choose between an array of seven-digit numbers, but can dial 9-1-1 and the call will be routed to a public safety answering point. In limited areas, there are a few systems which automatically display the telephone number of the calling party.

The majority of the state's 9-1-1 systems utilize the public switched telephone network in one form or another and do not have dedicated 9-1-1 circuits throughout their systems. Where the public switched network is used 9-1-1 callers compete with other telephone users for time on the network and an emergency call may not go through due to an "all circuits are busy" condition.

Within the next three years, 9-1-1 emergency telephone service should be available to all telephones throughout the state. During the next five years, an overall trend will develop for systems to reduce their reliance on the public switched telephone network and move to telephone circuits dedicated to 9-1-1. This movement will allow many areas to provide enhanced features such as automatic number identification (ANI) and automated files which provide the physical location of an emergency caller. To make these improvements increases in the level of 9-1-1 funding to local government will likely be required.

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*9-1-1 will be service provided throughout the state in next three years*

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*New 9-1-1 features can identify physical location of the caller*

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*Automation,  
agreements, and  
assistance improve  
radio frequency  
congestion*

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*Montana FCC plan for  
new frequency  
spectrum gains  
national recognition*

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*Land-mobile plan  
needed for public  
safety in the five years*

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**Land-Mobile Radio Communications.** As the Federal Communications Commission's liaison for public safety communications in Montana, the Department is involved in virtually all frequency management issues effecting state and local agencies. Although radio frequency congestion and frequency licensing demands remain a problem, improvements have been made through the implementation of a technical assistance program, formal frequency coordination agreements and the automation of frequency distribution data bases. Automation of the Department's frequency spectrum management system, which will be completed during the current fiscal year, will also enhance the Department's capability to support public safety communications users.

A major undertaking during the current biennium was the submission of a frequency plan to the Federal Communications Commission (FCC) for the newly available 800 MHz frequency spectrum. This plan, although not as yet approved by the FCC, represents the agreement of all major public safety communications users in Montana, including state and local government representatives and equipment vendors, on the future direction Montana's public safety radio technology will proceed. Notably, the Montana plan has received national recognition from the Association of Public Safety Communications Officers (APCO) as a laudable example of statewide participation and cooperation.

Mutual aid communications, using frequencies licensed to the State, have proven to be a keystone for effective interagency cooperation during an emergency response. Plans, policies and procedures have been developed and widely disseminated. These materials are now used as a basis for public safety communications training throughout the state.

The Montana Departments of Transportation, Justice and State Lands maintain separate land-mobile radio networks. Smaller state and local government agencies with land-mobile radio needs do not have the capacity to maintain or participate in such network systems. However, new communications technologies offer the potential for the creation of a unified, land-mobile radio system which would allow for greater network participation, improved geographic coverage, efficiencies in spectrum management, lower maintenance costs, and a longer more stable technological future.

During the next five years, the state should research the costs and benefits of a unified system and develop a comprehensive, land-mobile communications plan for Montana's public safety providers. This plan should incorporate state-of-the-art equipment and focus on the elimination of system incompatibilities and duplication, while maintaining user autonomy. Such a plan should provide a vision for the future of public safety communications, and must involve all potential state, local and federal government user agencies.

## **INITIATIVES AND EMERGING TECHNOLOGIES.**

**Distance Learning Networks.** Through the Montana Educational Telecommunications Network, METNET, Montanans will be able to teach, learn, and share educational resources and opportunities, ideally from anywhere in the state. Virtually all types of telecommunication technologies and resources are used in METNET, including computers and data networks, satellite dishes, interactive video networks, public telephone networks, and fiber optics.

METNET has been a highly visible and successful program for the State of Montana. Over 250 satellite dishes, 330 modems, and 15 bulletin board systems have been installed in 156 K- 12 schools and 6 University units. The initial response was slow, but as participation and enthusiasm increased, so has the demand. METNET in its various forms offers benefits to the State by addressing problems of rurality, size, subject area expertise in education, and the broadening and strengthening of community and entrepreneurial spirit.

A personal computer equipped with a modem is capable of two-way, interactive communication and of accessing a myriad of national data bases and bulletin boards. Montana educators are using computer-based data links creatively to provide learning opportunities never before available in Montana. At least four educational network applications for Personal Computers are now in use in Montana using the existing telephone infrastructure (Big Sky Telegraph, METNET BBS, Goliath, and the Young Scholars Program).

The METNET BBS provides teachers access to other teachers for course development, training, and the sharing of ideas. Students can access other students, and all users access a greater range of national and international data bases, computer bulletin boards, and subject matter expertise. More in-state classes and programs are contemplated over the next five years.

During the next five years, distance learning technology will increasingly be deployed in Montana. Video system and computer systems will combine to improve the educational process and more courses will be offered without concern of distance. Policies will need to be developed which properly reflect the educational communities' perspective on the offering and management of distance learning opportunities.

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*Montanans able to share statewide resources and learn with METNET*

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*With 15 BBS', teachers network with their peers to share ideas*

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*Courses will be offered without concern for distance in the next five years*

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**Voice response systems will improve access to government information**

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**Voice Response Systems.** Voice response systems allow callers to reach host computers to access databases and/or carry out transactions, using the keypad of a touch tone phone. Pre-recorded voice or text-to-speech is used to communicate with the caller, providing instructions, confirming the touch-tone entries and translating data from the computer into speech. It's called voice response because the system responds to touch-tone commands with voice responses. Applications of voice response can be used by many State agencies, such as:

- |                                      |                                   |
|--------------------------------------|-----------------------------------|
| • Social and Rehabilitation Services | Child Support Payments Tracking   |
| • Department of Labor and Industry   | Unemployment Verification         |
| • Department of Justice              | Job Announcements                 |
| • Department of Revenue              | Professional License Verification |
|                                      | Drivers License Verification      |
|                                      | Motor Vehicle Registration        |
|                                      | Tax Return Assistance             |

During the next five years, voice response technology will be acquired by ISD and managed centrally for all agencies to access. The public will interface with these systems as they are deployed and the improved services, at less expense, should be forthcoming.

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**Cellular telephone use will grow in the next five years**

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**Cellular/Wireless Telephone Systems.** Cellular telephone use by State agencies is growing and quickly becoming an effective communications tool for agency personnel. The number of State subscribers to this service has increased by approximately 50% over the past year. As a technology which combines telephone and radio services, cellular service is currently used to provide mission-critical communications for the Departments of Agriculture, State Lands, Fish, Wildlife and Parks, Transportation, and several units of the University System. It is found to be particularly useful for agency staff who travel a great deal and for those not supported by the State's existing radio systems.

During the next five years, cellular service is expected to provide mobile telephone service to more and more communities throughout Montana. Also during this period, the cost of the technology is expected to decline. This combination of larger service areas and improved costs will make the use of cellular telephones more attractive to State agencies. In order to offer standardized cellular services to State agencies, ISD is currently working with agencies to define their needs with the prospect of bidding for standard contracts from the industry.

It is anticipated that cellular telephone service will become an increasingly important part of many State agency communications systems and must be coordinated with other statewide communications initiatives. In fact, cellular or other wireless devices may at times replace telephone systems in State offices, providing greater staff mobility, reduced office relocation expenses and less reliance on wireline networks. Likewise, agencies without radio service today will be able to have field communications for improved worker safety and responsiveness to the public.

**Multi-Protocol Data Networking** In order to achieve the greatest functionality, and the greatest economy of scale, an objective of data communications is to be able to allow state agencies to connect any computer to any other computer using the Statewide data network. Although this is a complex technical topic, in essence different types of computers speak to each other in different "languages" or protocols, depending on what they need to do. For example a microcomputer uses one protocol to talk to the State mainframe, a second to talk to its Novell server on its LAN and a third to access University DEC computers or the national research and education Internet.

Multi-protocol connection will facilitate many types of agency activities. It will allow agencies with LAN computers at various sites around the State to share their LAN resources and for Helena staff to maintain computer software and configurations around the State without travel. It will allow agencies with staff in various cities to share microcomputer data directly without working from separate copies of the information or to form work groups independent of the physical location of individual group members. It will allow non-state agencies to communicate with State computers other than the mainframe. For example, schools could communicate directly with both OPI and University system computers.

Providing a multi-protocol network is one of the primary initiatives of ISD over the remainder of the decade. First, ISD must evaluate and establish a direction for the network which will be feasible for both continuing to provide the cost effective, reliable SNA services offered today and to allow agencies to establish high capacity LAN and Internet connections that are also reliable. Second, ISD must establish a timeframe and the funding resources for implementing this enhancement throughout the State. All this must be accomplished with limited budgets and within the framework of the computers and network architectures we operate today.

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**Data Network aims to connect any computer to any computer**

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**Multi-protocol networks are primary initiatives for next decade**

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## **Automated Information Systems**

### **STATEWIDE ADMINISTRATIVE SYSTEMS.**

Several large, mainframe applications exist to support administrative activities in agencies. These systems provide centralized functions, primarily on the mainframe platform, and include the Statewide Accounting and Budgeting System (SBAS); Payroll, Personnel, and Position Control (PPP); and the Warrant Writing System. Statewide administrative systems are used by all state agencies and provide a single, consistent means to accomplish common administrative processes. These systems have evolved over time as computer literacy among state employees has increased and their demand for additional function and processing improvements has been voiced. SBAS provides on-line entry and processing of accounting documents; PPP provides some on-line capture and query capabilities and provides electronic funds transfer of payroll "checks" to payees' banks.

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**Statewide administrative systems provide consistency**

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*More function, ease of use, and access will be demanded*

*Large agency systems serve remote locations and have high transaction volumes*

*Agencies will improve services through automation*

*Approximately 1600 E-Mail users exchange information electronically*

Additional administrative systems exist to support central agency operations such as purchasing or administrative rules publication. These systems have some automated function, generally at the personal computer level, to assist the centralized function, but these systems provide limited access or automated support to functions and responsibilities of the individual agencies.

During the next five years, the demand for more function, integration, ease of use, better accessibility, and response time will continue. Both the agencies managing these systems and the agencies providing technical resources to support for these systems will be planning and budgeting to meet this anticipated demand. During this time, it is unlikely that additional statewide systems of this complexity and scope will be developed.

### **AGENCY SYSTEMS.**

A number of very large agency application systems have been implemented on the mainframe in the last 5 years. These systems have in common the need to process very large numbers of transactions, to store large amounts of data, and to provide access to the system from offices located throughout Montana. Systems in this category include Department of Social and Rehabilitative Services TEAMS and SEARCHS, Department of Labor Job Service, and Department of Justice Motor Vehicle Registration.

Agencies also have implemented a variety of application systems on midrange and personal computer platforms. These systems have volume or access requirements that can be satisfied in a distributed processing environment.

During the next five years, the trend to use automation to improve agency programs will continue at a rapid pace with the focus on providing better service to the public. Applications will be designed to distribute workload appropriately among local intelligent workstations (PC's), departmental processors (Mini computers), and the mainframe. The Department of Administration will support this environment by provision of a standard set of software, training, network capabilities, and standards and acquisition policies and processes that assure network compatibility and foster enterprise exchange of documents and data.

### **AUTOMATED OFFICE SUPPORT SYSTEMS.**

**Electronic Mail.** Electronic Mail (E-mail) is system which provides the capability to exchange documents and written messages electronically. Productivity gains are realized as a result of immediate delivery, reduction in paper, and the ability to edit and respond. Exchanging complex governmental documents, budget reviews, bill drafts, and day to day correspondence are examples of e-mail use. Interdepartmental exchange, referred to as enterprise E-mail, offers benefits beyond those recognized within an agency.

In 1989, ISD initiated a comprehensive evaluation and selected an enterprise E-mail system that would serve Local Area Network (LAN) users and mainframe terminal users, provide an acceptable level of user functionality, and provide an aggressive and stable direction for the future. Several products were evaluated, with Electronic Mail Communications Center/Totally Automated Office (EMC2/TAO) selected for the mainframe component and ZIP!Mail selected for the LAN component. The EMC2/TAO gateway also provides connection to DEC VAX systems, allowing university units and state agencies which use DEC VAX

systems, to participate in enterprise E-Mail. Pilot implementation began in early 1991 and to date, there are approximately 700 ZIP!Mail installations, and 700 EMC users and 175 DEC users. Plans for fiscal year 1993 indicate a total of 1,000 ZIP!Mail users and 750 EMC users and 300 DEC users by the end of fiscal 1993.

In the next five years, the use of E-Mail will expand to include the majority of desktop workstations. The functionality of E-mail will expand to include workflow report distribution and work submission for applications, multimedia using voice and image, and links to public mail.

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*Majority of workstations  
will be connected to E-  
Mail in next five years*

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**Calendaring.** Calendaring and scheduling capabilities were first provided via a mainframe product, Personal Manager (PM), in 1986. Because of the requirement for mainframe connectivity and a less friendly user interface than personal computer products, this product is not heavily used. There are currently about 350 users.

An evaluation is currently underway to select a calendaring function for State government with the goal of providing the calendaring at the "enterprise" level, as well as within a department or work group.

**Graphical User Interface.** In the 1980's almost all PC's were equipped with a Character User Interface (CUI) that required the operator to remember and enter commands at the "C: prompt". This was not considered very "user friendly" and impeded even faster acceptance of PC's as a viable personal tool, especially in the higher managerial ranks.

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*Windows provides  
attractive user interface  
as state standard GUI*

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In 1990, a release of a software package called Windows made it the first widely successful Graphical User Interface (GUI). This product provided an attractive user interface, using a mouse and "point-and-click". A simple operation known as a "hot key" which enabled a property called "what-you-see-is-what-you-get" (WYSIWYG) allowed the user to quickly switch between multiple applications. In 1991, Windows was established as a standard for GUI in state government. Windows has introduced a much improved user environment, but has resulted in a need to review all standard software products because software must be written for Windows to achieve the full benefit of the software product. Since Windows was identified as the state standard for GUI for personal computer, there has been a gradual migration in the agencies. During the next five years, a majority of all personal computers will have GUI capabilities. It is likely that Windows will remain the standard.

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*WordPerfect has been  
state standard since  
1987*

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**Word Processing.** Word processing software standards were first established in 1984 when WordPerfect was selected as the result of a comprehensive software evaluation. DisplayWrite was recognized as acceptable word processor because of its use throughout state government at that time. WordPerfect became the single word processing software standard in 1987.

A comprehensive evaluation of word processing products is currently being conducted to select a product that will provide compatibility with the existing environment and provide expanded capability for other operating environments (graphical user interface or Windows).

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***Existing spreadsheet applications are an important factor in product evaluations***

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***Data sharing resolution adopted; DPMG subcommittee to define database direction***

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In the next five years, word processing will continue to be a tool used by most state government office workers. As new advances in technology and software evolve, products will be evaluated and the standard reviewed. WordPerfect is a market leader and is expected to stay abreast of technology. There is a strong possibility that it will continue to be the standard throughout this period.

**Spreadsheets.** Spreadsheet software standards were established in 1984 when Lotus 1-2-3 was selected as the result of a comprehensive software evaluation. As a result of operating environment changes, specifically Windows, a second comprehensive evaluation of spreadsheet products was conducted in 1992 to select a product that would provide compatibility with the existing environment and provide expanded capability for other operating environments. The preliminary recommendation, which has been submitted for Data Processing Manager's Group review and comment, is for Lotus 1-2-3 to continue to be the state spreadsheet software standard.

In the next five years, spreadsheet use by state government office workers will continue to increase. As new advances in technology and software evolve, products will be evaluated and the standard reviewed. Lotus 1-2-3 is a market leader and is expected to stay abreast of technology and heavy dependency of existing spreadsheet applications will be a factor in changing the standard.

## **INITIATIVES AND EMERGING TECHNOLOGIES.**

**Data Sharing.** By 1977 it was becoming increasingly difficult to implement application systems of ever growing size and complexity with existing software tools. As a result, mainframe database management systems (DBMS) were evaluated and the Integrated Database Management System (IDMS) was selected as the mainframe database product. For the most part, application system requirements developed using this software were carefully implemented so as never to interfere with agency autonomy. In spite of this very restrictive approach to the implementation of database technology, technical standards were established for use of the IDMS and how data was identified. But from its initial use until the early 1990's, there was little concern or interest in common use of data to avoid duplicative efforts of capture and maintenance, especially across agency lines.

As more and more agency programs are supported by application systems, and duplicative efforts are becoming more common and apparent, management has become more aware of the potential benefit of sharing resources. This interest surfaced during 1992 Data Processing Advisory Council (DPAC) meetings and resulted in a Data Sharing Resolution adopted by both the DPAC and Data Processing Managers' Group (DPMG).

As this topic was being discussed, a subcommittee of DPMG was formed to define direction for database in order that sharing of agency data would be facilitated as a result of appropriate DBMS software selection. Although driven primarily because of the proliferation of incompatible PC databases the resulting study also addressed the need to share data across all platforms and between agency databases, especially the large amounts of data that already existed in IDMS, the State's mainframe database. Database directions have been identified, and future DBMS selection should result in products that meet data sharing objectives.

In the next five years, the benefits and productivity of sharing data resources will be increasingly recognized by individual agencies and systems will be designed to share resources when possible. The selection of database management software products, other applications, hardware, network services, and their associated software standards, will consider the potential for sharing in selection criteria.

In 1992 DPAC decided that the potential for data sharing should become a standard part of agency systems development planning efforts. To further this goal, agency system development planning efforts will become a regular part of DPAC and DPMG meetings so the possibilities for data sharing can be investigated early in agency system development projects.

**Imaging.** Imaging technology will allow us to better manage more information. In today's environment, we manage approximately 5% of an organizations' information flow through automation. This is accomplished by typical accounting, payroll, and management information systems. Imaging can bring up to 50% of an organization's information flow under automated control.

Imaging applies digital technology to non-digital media. It allows the capture, storage and retrieval of pictures of forms, documents, and photographs. Fingerprints also can be stored and retrieved. Imaging is different from traditional information systems in the capability to store and render an image rather than some subset of data that was contained on a form or document or that describes the document.

In its simplest application, imaging has some benefits just in saving file space and the manpower needed to move paper around. However, the real benefits to be realized from imaging result from a whole different way of processing and handling information in the organization, called work flow redesign. Government is a prime example of where major improvements can and are being realized. Employee productivity is increasing, service is improving by quantum leaps, and, in some cases, operations have become revenue producing. Imaging is but an enabling technology. Realizing the benefits requires significant cost and innovative leadership by management and technologists.

ISD has coordinated an agency effort to establish guidelines and standards for the planning, acquisition, and management of imaging systems. As a relatively new technology, agencies recognize the instability of the technical environment and have established a method for ongoing review and update of these guidelines and standards as the industry evolves. In the next five years, many state agencies will embark in use of this technology. Planning for the FY 96-97 biennium will see budget requests from several agencies and perhaps a request for provision of a centralized system that might be used by multiple agencies.

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*Systems will be designed to share resources*

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*Quantum improvement possible with innovative leadership*

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*Imaging to be used by many agencies in the next five years*

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**Multimedia will deliver services directly to public**

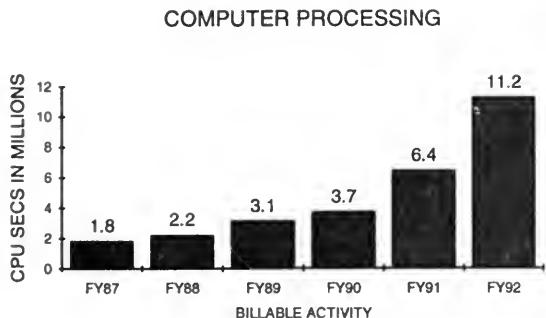
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**Multimedia.** Multi-media computer technology provides the capability to extend computing technology and government services to more people. This technology includes high-quality stereo sound and speech synthesis (the user need not be able to see), full motion color video images and animation (the user need not be able to read), and touch screen technology (the user need not be able to use a keyboard).

In the next five years, multi-media computer technology will have a tremendous impact in education and in providing service to the public. Early implementation of the technology, packaged in telephone booth type enclosure called a kiosk, will provide citizen access to services such as job search. Within the next five years, these kiosks will be seen in shopping malls, grocery stores, and other public places, saving the public the trip and time of a personal visit to a government office for information or service.

## Computer Systems

### CENTRALIZED (MAINFRAME) SYSTEMS.



Although growth in the use of alternative computing platforms (PC's and midrange) has been dramatic, mainframe computing continues to grow significantly each year. Mainframe use in fiscal year 1992 was 77% greater than fiscal 1991, and represented a six fold increase over 1987. This increased utilization is attributed to the following:

- Implementation of SRS's TEAMS System.
- Conversion of Department of Labor and Industry's Job Service System from outdated IBM 8100 to the mainframe.
- The addition of many smaller applications by state agencies.
- Expansion of various statewide systems such as PPP, SBAS, etc.

During the next five years, Montana State Government will continue to utilize the mainframe to accommodate many of its automation needs. Efficiencies will be realized as a result of the elimination of the IBM 4381 processor at the Helena Armory during this period. Improved price/performance of the State's Central Data Center, reflected in consistent, annual rate reductions will provide agencies with a cost effective solution for application systems requiring fast response times, very large databases and transaction rates, and statewide access. Effective and efficient data sharing between various agencies can also be provided by data bases residing on this platform.

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**Mainframes will continue to accommodate statewide agency systems**

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Price/performance of mainframe technology is further enhanced by continuing the current practice of purchasing used equipment at substantial discounts. This practice requires waiting for the latest hardware releases to reach the used market and usually means use of more stable, tested hardware. Further efficiency improvements will be realized during this period in the form of decreased labor intensity within the data center resulting from the planned automation of many manual tasks.

## **DECENTRALIZED SYSTEMS.**

Although ISD owns and operates the central mainframe, agencies acquire, own and operate their own mid-range and personal computer systems. ISD is responsible for the review and approval of these acquisitions. Significant conflict can occur between an agency wishing to "manage its own fate" and ISD's interest in assuring standards compliance for future agency coordination and the best use of existing State resources such as the mainframe.

ISD recognizes a place for all three types of computer systems. Large, statewide operational systems are often best run on the mainframe. Mid-range computers excel at some department level centralized systems such as certain types of database development, engineering design systems, and scientific computing. In addition, agency specific software is sometimes available for mid-range systems as was the case with the Lottery and Revenue's CAMAS systems. Personal computers are best used for general office tasks such as electronic mail, computer terminals, word processing, spreadsheets, and small data management tasks.

Two relatively new classes of computer systems have emerged that blur the distinction between personal computers and mid-range computers. One is LAN servers which are typically very large and complex microcomputers providing service to hundreds of users in a department and rivaling the technical and operational complexity of mid-range computers. ISD treats this class similarly to personal computers from a policy and acquisition point of view. The second is personal workstations which evolved as very small, but extremely powerful, "mid-range" computers dedicated to a single person. These are heavily used in scientific, engineering and design environments such as CAD systems for Highway design and the State Library's NRIS GIS system. ISD currently treats these as mid-range computers and provides looser standards and support.

During the next five years, the state will need to invest in all of these computer platforms. It is incumbent upon the agencies, and ISD, to ensure that investments are being made in the platform which will serve the best long term interest of the agencies, and the state as a whole.

**Mid-Range Computer Systems.** ISD provides limited statewide standards, policies or support for mid-range computers. ISD works with each agency during their acquisition process to ensure that the acquisition of any mid-range computer will operate with the network, can be operated and supported by the agency and is cost justified not only from an agency point of view, but also from a State perspective. For example, if an agency were to use the mainframe, that additional growth would result in a rate decrease to all users and that must be factored in to any acquisition to insure that the taxpayer is best served.

Current mid-range computer systems handle the Revenue CAMAS system, the State Library's NRIS and GIS systems, Transportation's highway design and other general computing systems, DNRC's departmental and office system needs, Corrections' computing needs and Property and Supply's business system. Mid-range systems are or have recently been phased out in favor of microcomputer systems for general office and data processing needs in several other agencies.

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*Agencies manage mid-range computer and personal computer systems*

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*Choosing the right platform to serve the long term interest of the state is important*

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*Property tax and natural resource systems use mid-range computers*

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***Statewide cost-benefit analysis of mid-range computers will be emphasized***

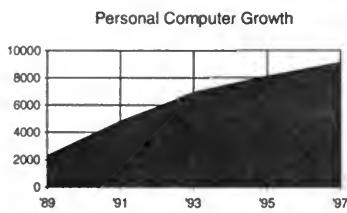
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During the next five years, ISD's review of these acquisitions will continue and compatibility with network, electronic mail, and database compatibility standards will be required. In addition, increased attention to the overall cost/benefit analysis to the State rather than the agency will be emphasized. However, it is unlikely that strict standards will be developed or that ISD will begin providing support and assistance with these systems.

**Personal Computers.** The State has invested in more than 6000 personal computers over the past 10 years, most of which are still in use. Most of those computers were purchased from term contracts that established standards for State agencies to follow. ISD reviews all personal computer acquisitions. Beginning in 1990, ISD began strictly enforcing the use of those term contracts for all microcomputer acquisitions. Those contracts provide IBM and/or IBM compatible (currently IBM, DEC and Dell) microcomputers as the State's standard environment.

State policy recommends the use of microcomputers for word processing, spreadsheets, electronic mail and calendaring, small data management tasks, graphics, and as terminals to other computer systems. In addition, the contracts software, data, and access to shared resources like tape backups, printers and other peripheral equipment.

During the next five years, the state will continue to buy 500 - 1000 microcomputers per year and is likely to continue this until each information worker has a personal workstation. Replacement of older personal computers will increase during this period, and this will be a recurring activity for all agencies as their imbedded base of equipment ages. Standard personal computer contracts will continue to be managed by ISD for all agencies. Over the next several years ISD will need to consider whether the standardization of non personal computer based workstations is merited and if so, to what extent.



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***DPAC and DPMG have built stronger working relationships***

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## **Policy Issues Facing Technological Deployment**

### **Interagency Advisory Groups.**

Two formal groups are organized to provide advice and direction to the Department of Administration as it carries out its responsibilities in information services. These groups also provide a forum for agency management to share experience, develop knowledge, and identify priorities for information technology management.

In order for the state to move forward in information technology, ISD believes it is absolutely imperative for the improved communications and working relationships to continue with both DPAC and DPMG. ISD will assist as the facilitator for both these groups, will work with subcommittees, will bring strategic issues forward, and will help foster communications among agencies to reach the consensus needed on upcoming strategic issues.

**Data Processing Advisory Council (DPAC).** The council was continued by executive order in October 1991 with new appointments made by each agency. The current membership list is located in Appendix D. DPAC has been active in the 1992-3 biennium. It reviewed the status of current initiatives in state information systems including centralized network management, management of personal computer acquisition, network operating systems and local area networks, electronic mail, disaster recovery, and imaging. The computerization and information processing technology study conducted by the Joint Interim Subcommittee on Management of Information Processing Technology in Montana State Government was followed closely. The council prioritized technology initiatives for ISD preparation of the Executive Planning Process and passed a resolution to promote the sharing of data among agencies (see Appendix E).

The relationship with the Data Processing Managers' Group was strengthened, providing improved communication between the two groups. Enthusiasm about the DPAC mission increased, and the commitment for regular meetings and more intense involvement was expressed by all members.

In the next five years, the relationship between the DPAC and the Department of Administration will become stronger. DPAC will have a much more active involvement in the formulation of strategic and tactical information technology planning and policy development. The council will be involved from the outset as new technology initiatives are identified and will derive significant benefit by sharing experience and information with other state agencies.

**Data Processing Managers' Group (DPMG).** DPMG provides a forum for agency data processing managers and the Department of Administration. to discuss issues, analyze opportunities, share ideas, and recommend improvements. Meetings provide an opportunity for free exchange among data processing professionals on subjects of common interest and concern. Membership is voluntary and includes data processing managers, agency system coordinators, and other interested parties. A current membership list is found in Appendix D.

DPMG has been very involved this biennium. Agency participation has been strong at regularly scheduled business meetings, special working group meetings, and subcommittee meetings. Subcommittees were formed to address specific initiatives or concerns of the DPMG including Novell Topology, Disaster Recovery Planning, Novell Product and Service, Purchasing and Cost, Compensation and Classification, and Database Directions. DPMG members or representatives participated in Request for Proposal preparation and evaluation for Microcomputer Maintenance and Training Services. Members maintained active interest in the progress of both DPAC and the Joint Interim Subcommittee on Management of Information Processing Technology in Montana State Government and DPMG presentations and progress reports were presented at meetings of both groups.

Members passed a data sharing resolution stating the intent of agencies to share data with other agencies and to use systems that will facilitate the sharing and reviewed. They approved the document produced by the Imaging Project team defining standards and recommendations for the selection, implementation, and

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*DPAC to be actively involved in policy and strategy in the next five years*

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*Data sharing resolution passed by DPAC and DPMG*

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**DPMG members to participate in tactical and strategic planning in the next five years**

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**Access to network is an issue of strategic importance**

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management of imaging systems. The group was a focal point for coordination of several training opportunities.

During the next five years, DPMG members will participate actively in the decision making and planning of statewide information technology activities. Agency representatives or appointees will continue to participate on subcommittees to formulate strategy and policy and to select products and services. The relationship between DPMG and the Department of Administration and DPMG and DPAC will continue to improve as each of these organizations emphasizes the importance of developing and maintaining good lines of communication and interaction.

**NETWORK ACCESS.**

Of major strategic importance to Montana is the issue of what type of information and for whom can the State's Telecommunication Network be made available. Today, per statute, (2-17-301, MCA) the network is available only for state agencies and for political subdivisions of the state (cities, counties, school districts, etc.). Rules promulgated by the department make it clear that appropriate use of the network's facilities is only for state government business purpose. The department's rules also allow non-profit organizations which perform services traditionally performed by the state (i.e. Human Resource Development Councils) access to the network.

The advent of technological advances in communications, particularly in the video area, the costs associated with building or managing networks, the strategic importance networks are taking on to all organizations, and the potential for improved economies through sharing bring together many of the key reasons why the state needs to address the question: to what extent can the state, and should the state, allow its network facilities to be used by 1). non-profit organizations in the medical community, 2). for profit organizations in order to assist in improved economic development for the state, and 3). other classes of businesses and organizations. The usage allowed by these entities must also be weighed, and the impact these changes might have on other traditional uses, and funding, has to be kept in the forefront.

The department believes this is an important issue to be decided in the next several years, and recommends that this issue be given attention by the highest levels of the executive branch and the legislature.

**FUNDING OF TECHNOLOGICAL INITIATIVES.**

Like all program areas, funding, or the lack of funding, is crucial to the development and continuity of technological initiatives. This may be even more important in technological areas due to the often large capitalization requirements required to acquire equipment and software. Furthermore, technological investments often are misunderstood because of their complexities, and because technological obsolescence and massive growth requirements compel state managers to request additional or increased funding on a frequent basis. This is the legacy technological investments have had to take on, and take on still, yet the value of the monies invested is irrefutable.

The importance of the technological capabilities within agencies of state government cannot be overstated. Without the many computer systems and networks in place today, state agencies could not offer the services they provide.

The cost of government without an appropriate technological base will greatly exceed the cost of government with a healthy advanced technological infrastructure. Properly defined and managed technological investments can be part of the solution to Montana's financial problems, and should not be looked upon as part of the problem. Consequently, in spite of the difficult fiscal times of today, the state should work hard to make funding available for technological projects which can improve the offering of government services.

Creative solutions of our funding problems for technology should be researched to include:

- technological fees assessed to those who are most likely to benefit from technology;
- the establishment of sinking funds where investment dollars can grow for future technological needs in order to avoid huge interest costs related to equipment acquisitions;
- consolidation, where appropriate, of agency technology dollars to provide greater purchasing leverage, and;
- the support for technologically dependent proprietary programs to have more flexibility in the management of finances, so long as predefined rate objectives, approved by the legislature, are maintained.

These, and other, funding innovations should be seriously considered in order for Montana's technological infrastructure to properly evolve, along with the government services it serves.

### **ENTERPRISE REQUIREMENTS.**

As technology plays a more active role in the work each state employee does and as technology plays a stronger role in the delivery of services to the public, a shift is taking place regarding the value and importance of a single, common approach to solving problems with technology.

In the 1980's, agency autonomy was considered an essential criterion in addressing local processing needs. The quantum gains in productivity by using ANY word processing software, first for the secretary, then for all administrative staff was justification enough for computing decisions. Beyond this initial phase, agencies are recognizing the benefits of being able to exchange documents, hire employees who are already skilled in the environment and tools used, and connect easily with other agencies networks.

The ability to share, exchange, and benefit from the use of common tools requires that many information technology decisions are made with consideration for the value and potential for statewide use. In addition, the investment in software, staff training, and the inherent value of a large base of data in a particular software's format often requires that future decisions be based in part on the existing installed base. Examples of recent technology decisions affected by this concern are E-mail, word processors, and spreadsheets.

In the next five years, state government will place more and more emphasis on "one company" or "one face of state government" solutions. The Department of Administration and agencies will place high priority on this approach. Central technology decisions will consistently consider the state as a whole and will

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### **How will initiatives be funded?**

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### **The value of sharing resources is important**

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***Subcommittee studied  
management of  
information processing  
technology in Montana***

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maintain an infrastructure of hardware, software, support, and services to promote enterprise solutions. Agencies will continue to weigh their decisions carefully, and will often compromise autonomy for the benefit of the enterprise. The challenge will be to manage the decision making process to distinguish between: non-standard directions based upon substantial and legitimate needs of an agency; and approaches with insufficient justification or chosen simply for autonomy's sake.

**HOUSE JOINT RESOLUTION NO. 48 (HJR 48)  
ISSUES.**

HJR 48 which was passed by the 52nd Legislature, directed the Legislative Finance Committee (LFC) to work closely with and seek the input of the Legislative Audit Committee (LAC) and the Department of Administration (DofA) to study management of information processing technology in Montana. A subcommittee of the LFC and LAC was formed and met in December 1991, and April, June, and October 1992.

These meetings included staff and agency presentations discussing the history of information processing technology, Montana statutes governing the technology, state agency computer-related expenditures, rate establishment for data processing services, summary reports of selected systems, disaster recovery, and coordination of large system development and implementation. Agency management presentations included discussion of ISD role, policy, and goals; a report from the Data Processing Management Group (DPMG); discussion of TEAMS and CAMAS development and implementation; comments regarding coordination of large projects among agencies; and a proposal to reorganize management of PPP (payroll, personnel, and position) and warrant writer systems.

Several formal interim reports were issued and key issues were identified and recommendations were presented at the October meeting. The recommendations were amended as a result of agency, DPMG, and the DPAC comment.

The subcommittee recommendations were unanimously accepted by the full LAC and LFC on November 20, 1992 and legislation will be introduced in the 53rd Legislature to reflect the changes. The following summarizes the recommendations:

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***Subcommittee  
recommendations***

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Amend statutes regarding computer crime to specify that the following as a crime: 1) state employees' use of a computer for private businesses; 2) unauthorized alteration of computer data; and 3) obtaining unauthorized access to a computer.

Amend statute to give DofA authority to evaluate and control acquisition of all types of DP equipment.

Amend statute to give DofA the same control over software as DP equipment acquisitions.

Amend statute to delete the requirement that DofA provide a DP equipment pool.

DofA develop a definition for DP services that ensures review major or costly DP services contracts.

DofA continue and refine progress in outreach to agencies through contacts with the DPMG and involvement with DPAC; require review of and recommendation on existing and proposed DofA policies.

DofA appoint and use DPAC each biennium.

DofA develop the statewide data processing plan before budget issues are final; formally present the plan for review to DPAC and OBPP; prepare guidelines as to the content the plan; and document equipment needs for the next 3 to 5 years.

DofA has publish statewide computer policy summaries in a single publication and incorporate policies in the Montana Operations Manual (MOM).

DofA expand its role in agency development of large projects by using DPAC as a focal point for agency discussion and planning and agencies consider interdepartmental coordination in system planning and feasibility.

DofA, Department of Commerce, and the Office of Public Instruction discuss computer system compatibility issues with local governments, as time and resources permit.

Establish and report ISD equipment and operating reserves separately. DofA explicitly state in its rate development process and budget request anticipated subsidies among computer-related services.

Endorse the concept of the DofA consolidation proposal for the PPP and warrant writer systems.

Termination of the interim study with the LFC and LAC follow-up.

### **PERSONNEL RECRUITMENT AND RETENTION.**

Considering the increasing dependency the state has and continues to develop for information systems and services, state government needs to make it a priority to improve agencies' ability to retain their expert staff and recruit effectively when necessary. If the state cannot do this, much of what is planned for increasing use of computers and information technology can not be accomplished.

*Priority is to recruit and retain qualified staff*

The difficulty of recruiting and retaining data processing professionals has had a very noticeable detrimental impact on the ability of state agencies, including the Information Services Division, to implement their plans and to complete

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*Difficulty of recruitment  
and retention  
jeopardizes critical  
systems*

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*Local firms are heavily  
staffed with former state  
employees*

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*Cost to replace  
experienced individual  
approaches \$40,000*

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projects on time and within budget. In the extreme, this problem jeopardizes agencies' abilities to keep critical systems operational.

Recruitment and retention of data processing professionals has been recognized as a problem since 1980 when a blanket 4-step pay increase was granted to help deal with the problem. By the late 1980's many DP-professionals were stepped out at step-13, and yet they were receiving pay significantly below market. At about that time, retention began to be the most critical problem for the agencies. The need for DP services was growing significantly and the dependency on our knowledgeable DP and telecommunication experts was also becoming increasingly critical. Market competition began to increase within the state and within the city of Helena as Blue Cross Blue Shield expanded their DP activities and BDM Corporation set up shop to develop and support some of the largest DP applications in the state (TEAMS and SEARCHS). Both of these firms are currently staffed heavily with employees whose experience was gained working for the state and whose training was acquired at the tax payers' expense.

When an experienced professional leaves the state, a serious void is often created which jeopardizes agencies' completion of projects and ability to support systems. But, perhaps the most significant problem is the time and cost associated with replacing these experienced individuals. Some critical positions sit vacant for many months, even a year or more as agencies toil with the futile job of trying to recruit the kind of expertise they need when the state is paying as much as 20% or more below market. Some well qualified individuals have considered job offers that would allow them to "return to Montana", but the substantially lower salaries discouraged most of these individuals.

The alternative to recruiting the experience agencies need, is to hire trainees right out of college and start a lengthy (commonly 2- years) on-the-job training program to bring these individuals up to the technical level necessary to be productive. This training includes class room instruction often available only out-of-state and on-the-job training always involves time spent by senior staff members which takes away from their productivity. The total cost of replacing an experienced individual has been estimated to be as high as \$40,000 per occurrence. Once trained, with some additional experience, these individuals become highly marketable and many choose to leave state government within a short period of time.

Today's pay system allows for pay exceptions for recruitment, which gives agencies the flexibility to increase the starting salary of a new employee above the base level up to approximately "market" level. This is helpful but not adequate in all cases because the "market" level is an average market level for all classifications within a given grade level. Data processing and telecommunications market levels are higher than the average. The most serious problem agencies face is retaining their experienced and highly trained professionals. A pay system that provides a means for management to retain experienced trained professionals would improve this serious problem.

## **CONTINGENCY PLANNING.**

State agencies have developed a strong dependence on the availability of computing and communications capabilities to carry out day-to-day administrative duties and to deliver services to the public. Disruption to any portion of the structure of hardware, software, building, utility, or support services can seriously impair the ability to work and to provide service. Contingency plans which define procedures, responsibilities, and arrangements for use of alternate facilities in the event of a disruption are important for every agency that has developed a strong dependence on information technology. Contingency planning is an on-going process, and is gradually evolving in state government. The process is gradual because of the resources required to develop a comprehensive plan and the many different components to be covered.

The fifty-second legislature (in 1991) recognized the crucial dependence that state agencies have developed upon the continuous operation of the State's mainframe computer system, and recognized the need for an effective disaster plan to be developed and implemented should some disaster severely damage or destroy this critical resource. The result was an appropriation to provide disaster recovery planning, including an alternate processing site (Hot-Site), for the mainframe resource.

A contract has been established with Weyerhaeuser Corporation for "Hot-Site" services. This contract provides a "Hot-Site", which includes mainframe and selected mini (AS/400) computing equipment available for use during an emergency, and assistance in preparation of a disaster recovery plan. The "Hot-Site" is compatible with the State's central data center and agency AS/400 processing centers and is of adequate size to handle the State of Montana's mainframe workload during an emergency. Use of this "Hot-Site" during some future disaster requires substantial effort by the Department of Administration and agencies with mainframe applications. On-going work is required to configure, test and maintain the facility in order to assure the state's production system will operate at the "Hot-Site". Work is also under way to develop agency disaster recovery plans and to prepare agency application systems to run at the "Hot-Site". This effort, when complete, will provide a portion of mainframe computing recovery. The next phase of mainframe contingency planning will include provision of a means to connect the SNA network to the "Hot-Site".

In the next five years, the Department of Administration and all state agencies will apply significant personnel and financial resources to contingency planning. State agencies with mainframe dependencies will be developing, improving, and testing their plans; the Department of Administration will continue to expand its capability to provide alternate resources. The Department of Administration and all state agencies will also be developing contingency plans for the entire state telecommunications network (voice and data) and distributed processing environments (mini computers and personal computers and local area networks).

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*Contingency plans for use of alternate facilities important*

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*Disaster recovery plans being developed to use Weyerhaeuser "Hot-Site"*

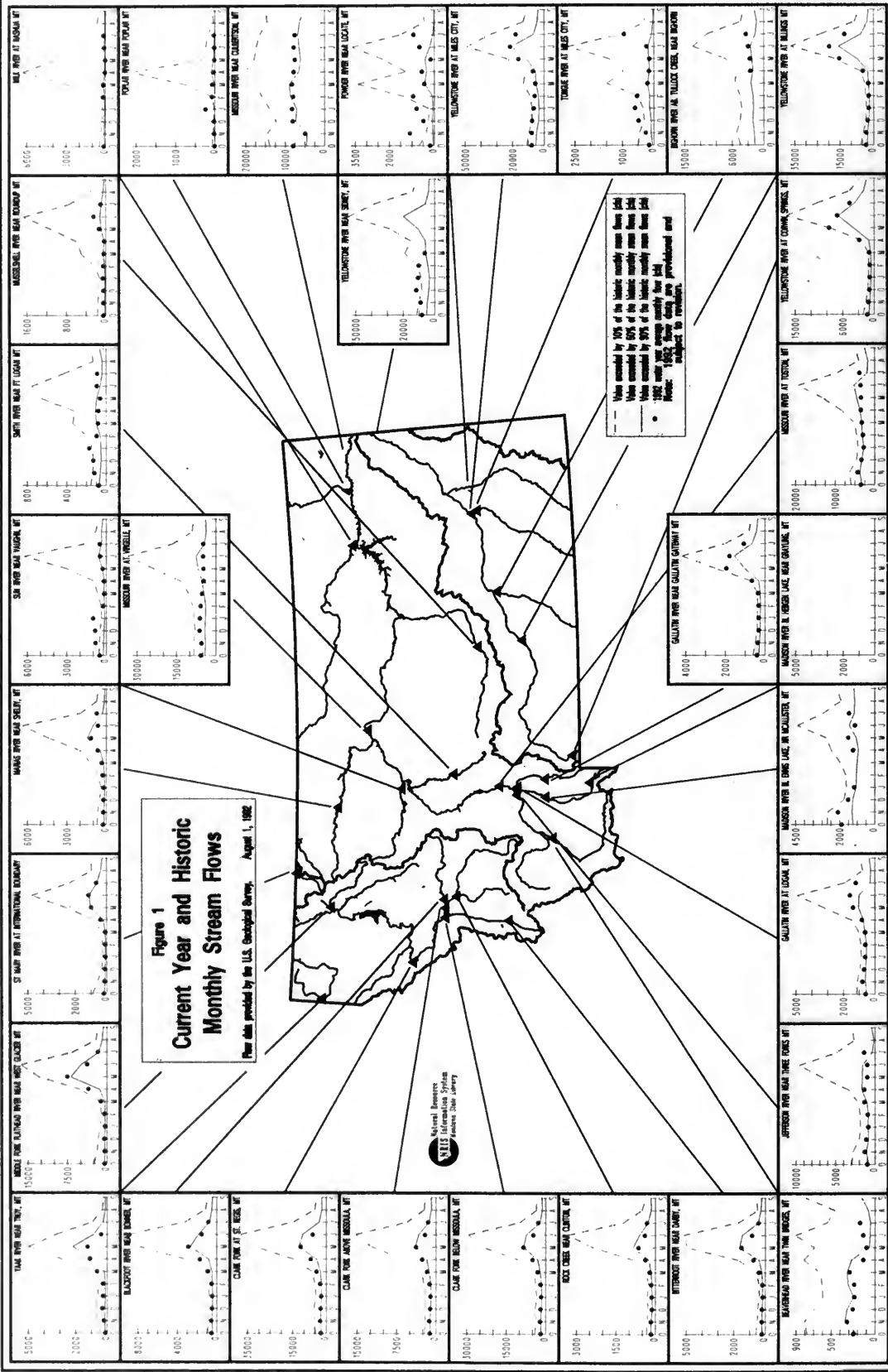
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*Significant resources required for contingency planning in the next five years*

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**Monthly Drought Conditions:** Refer to page 69, the State Library section regarding how the Natural Resource Information System is used to analyze drought conditions throughout the state.



# **Administration**

## **FY94-95 Plans**

*The Director's Office* will emphasize standardization and integration of LAN's. Bond Calc will be used for management reports and calculating bond payments.

The *Accounting Bureau* is planning new on-line applications. This will include inputting ICC Forms 191 and 192, inquiring into ICC records and maybe inputting of PAMS documents. They will continue to provide agencies with more data from SBAS and to help them manipulate this data more efficiently.

The *Architecture and Engineering Division* will purchase and install Autocad to better facilitate in-house design; and make the office compatible with consultants'. The Division will also purchase modems to instantly transmit contract specifications/drawings to consultants, agencies, etc. This will greatly reduce the turn-around time for document submittal and review.

The *General Services Division* plans to convert their current database applications from PFS to FoxPro to enhance their reporting capabilities. They will be implementing an Energy Accounting Program for Lotus 1-2-3 to analyze the consumption and cost of water, gas and electricity.

The *Management Support Bureau* will provide technical support for the Department and coordinate the standardization of all LAN's to maximize the investment in microcomputer and network technology. The Bureau also plans to develop a PC application to balance bank accounts (a manual procedure).

The *Personnel Division* will oversee the development of an on-line State Insurance System. The Division will complete a PC database application for pay plan analyses and workforce profiles. All mailing lists will be consolidated on a PC application. Position descriptions will be stored and retrieved electronically. The possibility of giving agencies electronic access to the Montana Operations Manual (MOM) will be researched. The Professional Development Center plans to attach three of their Apple Macintosh PC's to the Department's LAN to provide an interface between DOS and Macintosh files and the ability to electronically communicate with the Department and outside agencies.

The *Purchasing Bureau* hopes to replace their PClan network with Novell and upgrade the APS system to be compatible with Novell. The Division will research the possibilities of allowing agencies electronic access to their vendor list. They also plan to enhance the Bid Tabulation System.

The *Risk Management and Tort Defense Division* will continue to develop and enhance the claims/lawsuits database. Enhancements planned include a fully automated report generating and printing system. The Division will develop a PC based applications for legal information management. This system will include: automated document generation; a legal brief database; electronic legal case file organization; address and telephone number retrieval systems; and trial support staff workload and time management systems. CD-ROM technology will be evaluated for the storage and retrieval of the Supreme Court Standard database. User's manuals will be developed and printed.

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*Provide new on-line accounting applications*

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*Install computer assisted design (CAD) system*

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*Develop new state insurance system*

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*Provide agency access to vendor list*

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*Automate case management*

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## **FY96-97 Plans**

### Automate classification

The *Architecture and Engineering* Division plans to use telecommunication systems to send and receive Long Range Building Program information from agencies located statewide.

The *Personnel* Division plans to automate the job evaluation process. The system will automate the analyses of pertinent position information and provide supervisors with a more efficient and effective method of classification.

### Installed E-Mail

### Upgraded hardware and software throughout the department

*The Director's Office and the Data Processing Steering Committee were responsible for the installation an electronic mail system for nearly all PC users. The Department also upgraded to WordPerfect 5.1 and DOS 5.0.*

*Accounting surveyed agency data processing systems and needs. The process of downloading State financial data directly to spreadsheets on PCs was completed.*

*Architecture and Engineering's PCLan Local Area Network was eliminated and the division was connected to the Department's LAN. Data security and backup/recovery procedures were improved. New PC's and printers were installed A PFS database was developed to track all projects.*

*The General Services Division was successfully attached to the Department's LAN. With the newer version of PFS, they were able to streamline the automation of their Work Order Control System.*

*Management Support provided technical support for the Department's LAN. An IBM PS/2 Model 95 and Netware 386 was installed. Two additional divisions were added. The old server was installed at Purchasing and their server went to PERD.*

*Personnel developed the following applications: PDC Billing; Classification Request Logging; Classification Inventory, and a tracking system for the State Employee Combined Campaign. The Division also installed FoxPro Lan for database applications. Development has begun on a Workforce Profile and Pay Analyses system to produce pay analyses reports and statistical reports. The Division upgraded hardware and software and added two laser printers.*

*The Purchasing Bureau upgraded LAN hardware and software. A fax modem was installed and is being utilized for procurement of natural gas.*

*Publications and Graphics implemented: Desktop Publishing, Envelope Management System, Automated Billing System, and Automated Vendor List.*

*The Risk Management and Tort Defense Division installed two modems to access LEXIS and Montlaw. The claims/lawsuit database was substantially revised, making it more accurate and efficient.*

# **Admin. Attached To Agencies**

## **FY94-95 Plans**

The *Public Employees Retirement Division* will develop an on-line database to provide actuaries and auditors with more current information in such areas as tracing and calculating buy-backs and employee salaries. This system will affect 35,000 members and provide the ability to calculate the cost to members to buy back service credits. The Division also hopes to replace their PCLan Local Area Network with Novell to improve their networking capabilities and data security.

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*Provide on-line information for PERD actuaries and auditors*

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*Teachers Retirement Division* will complete the installation of a MicroVax 3100 Model 90 with customized benefit application software. This will reduce operating expenses and reallocate personnel time to help members understand their retirement system and provide pre-retirement planning. Upgrade the existing 286 PCs to 386s to reduce maintenance costs, improve efficiency, increase memory, and allow utilization of windows and the mini-platform is also planned

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*Complete new Teacher's system implementation*

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*Teachers Retirement Division* will purchase a portable PC to give current retirement estimates to members at presentations and seminars. Retirement estimates, options and a review of the individual's record can be accomplished on site. The Division also plans to convert all hardcopy, microfiche and microfilm files and reports to electronic media storage. The typical history search and report currently requires over 300 personnel hours. Conversion to electronic media (tape, CD ROM) will allow processing within minutes.

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*Implement imaging system*

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The *State Fund's Automated Benefits Information System* is an aggressive series of projects aimed at improving the State Fund's methods and procedures for handling all aspects of benefit delivery. Spanning more than two biennia, this project involves the improved automation of all aspects of payment of benefits, management of claims, reserving processes and management of paper. The major emphasis of the project is to control expenditures and to expedite services. Improved information processing to facilitate return to work, to encourage fraud investigations, to monitor rehabilitation and other capabilities are to be given special attention.

The first phase of the project involves implementation of comprehensive data systems to support the Benefits department. The second phase eliminates the old hardware systems and migrates the Benefits Department onto the agency Local Area Network. This will allow for integration of local claims management capabilities with the more flexible Windows environment. The final phase involves conversion of the paper-based claims filing systems to an imaging system. It is anticipated that this system will be designed to integrate fully with the new data and word processing systems. This phase should begin in late FY95 and will extend into FY96.

The *State Tax Appeal Board* plans to replace their PCLan network with Novell and/or be connected to the Department's LAN to increase their communication with other agencies. They also plan to replace two of their PPSII 2390 printers.

## **Accomplishments**

**Increased use of electronic submission**

**Improved State Fund policy services**

**Developed employee training program**

*Public Employees Retirement increased the number of agencies reporting payroll electronically and cities/counties reporting information directly to the mainframe. The Division has installed an HP LaserJet and two workstations.*

*Teachers' Retirement System awarded a contract to develop, install, support, and modify a customized benefits software application and purchased a MicroVax 3100 model 90 platform to run the application. This system and application will be fully operational by July 1, 1993. This system will save personnel hours and decrease operational computer expenditures.*

*The State Fund implemented major enhancements to the policy services system including a re-write of the on-line system and its access security. Changes were made to the policy billing system to allow for a multiple rate structure based on loss experience and delinquency rate.*

*Changes were made to the policy services billing and cancellation systems to allow for receiving premium with the employer's payroll report and eliminate grace periods resulting in timely receipting of premiums.*

*A bar-coding system for tracking claims paper files was implemented greatly reducing the time spent in file-searching.*

*The LAN expanded from 25 users to over 60 users to include the Underwriting Department. Standards for program development, systems security and for monitoring systems use were developed. Complete in-house courses in Windows Workstation, in Word and in Excel were developed and all users were fully trained in the new environment, maximizing the efficient use of the system, and saving approximately \$9,000 in training costs.*

*An automated system for monthly submission of data to the National Council on Compensation Insurance was installed. This system saved the State Fund \$130,000 in assessments for services in FY92, improves the quality of information provided and eliminates fines for improper reporting.*

*The policy services billing system was modified to allow for proper billing of premium when an employer is qualified for a variety of modification programs. Included in this project were capabilities to modify premium for qualified construction firms. Additional changes improved the safety incentive programs and retrospective rated policies, and expanded the cancellation processes.*

*A full needs analysis and feasibility study will be completed for the Benefits Department in FY93.*

*The State Tax Appeal Board created computerized forms that increased the production of office business documents and correspondence.*

# **Agriculture**

## **FY94-95 Plans**

The Department of Agriculture will be converting the LAN's at the Laboratory Bureau office in Bozeman, and the main Helena office to the Novell network system.

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*Upgrade networking for  
Agriculture and Consumer  
Counsel*

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## **Accomplishments**

*The Department of Agriculture completed the automation of the State Grain Laboratory in Great Falls.*

# **Consumer Counsel**

## **FY94-95 Plans**

The Counsel currently has 5 standalone PC's and 3 printers. Networking of these workstations will be pursued as a means to improve office productivity.

Electronic sharing of docket information with the Public Service Commission will be evaluated.

# **Commerce**

## **FY94-95 Plans**

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### **Convert to state standard LAN**

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It is the goal of the Department of Commerce to convert from the AT&T minicomputer UNIX environment to ISD standard Novell Local Area Network technology over the next 2 biennia. The initial thrust for this was provided by installation of a LAN for the Local Government Services Bureau Audit section funded by the 1991 legislature. The LAN server acquired for LGS has the capacity to serve more PC's than just those in LGS. PC's in Management Services and the remainder of LGS will be added to the LAN during 1993 with other divisions at 1424 9th Avenue added as they acquire PC's of network capability. For 1994-95, the following are planned:

Acquisition of PC's by all departmental divisions, replacing roughly half the remaining dumb terminals in the department. The PC's will be used as terminals on the existing UNIX system until servers are acquired.

Acquire a database server based on an Intel platform to replace the AT&T 3B2/700s at 1424 9th Avenue. Until replaced, the 3B2s will serve both the UNIX users now connected and, via separate wiring and terminal emulation, the LAN users who need to access databases on the UNIX system. It is hoped that enough workload will be shifted to LAN users in 1993-1995 to avoid having to buy upgrades to the obsolescent 3B2s.

## **FY96-97 Plans**

Acquire and install servers in two of 5 remote locations.  
Continue LAN Conversion  
Acquire PCs to replace remaining dumb terminals.  
Acquire and install servers in remaining remote locations

## **Accomplishments**

*Electrical permits function automated in Building Codes Bureau.*

*LAN installed in Local Government Services Bureau.*

*Transportation Division moved to Department of Transportation. Local Government Assistance division moved into the space transportation vacated and their computer users moved from their 3B2/400 to the department's 3B2-700.*

*Travel Promotion data entry system at Montana State Prison upgraded from 3B2/300 to 400 surplused by Local Government Assistance.*

# **Corrections and Human Services**

## **FY94-95 Plans**

The department plans to undertake a comprehensive analysis of its business requirements with the purpose of developing a department-wide information management plan that will guide future applications, re-engineering, system enhancements and acquisitions. An implementation plan will be developed and initiated during the 1995 biennium.

Installation of appropriate hardware and software in local areas and the central office to provide basic office functions, shared applications, and connectivity to a local area network and to the AS/400 remains a department priority.

The department will work with the Medicare fiscal intermediary to implement electronic submission of billing claims.

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*Develop comprehensive plan*

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*Submit Medicare claims electronically*

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## **FY96-97 Plans**

The department will continue implementation of its information management plan according to the timetable and resource priorities identified by department management.

All current and emerging technologies will be evaluated for its potential to provide enhanced productivity, client services, and improved management reporting.

## **Accomplishments**

*The department acquired an IBM AS/400 mid-range computer to replace its System 38. It has improved the operating performance of existing systems and provides the department a solid foundation for future enhancements.*

*Installation of 9600 baud modems has doubled transmission speed.*

*Enhancements to the Prison canteen program will reduce time, effort, and costs. The system consists of three parts: canteen order processing, inventory control and reporting. It will allow on-line control of the canteen, from item restrictions, price control, and printing of delivery tickets.*

*Electronic submission of billing claims to the Medicaid fiscal intermediary will result in faster billings and reimbursements.*

*A mail and visitation system at the Prison will reduce staff time required to manage the information on visitors, number of visits, etc.*

*Installation of communication hardware and software at community chemical dependency treatment facilities will enable access to the AS/400 for remote entry of federally required data reporting.*

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*Upgraded departmental computer*

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# **Family Services**

## **FY94-95 Plans**

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### *Implement client and child care systems*

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Continue development and implementation of the department's comprehensive client-based management information system. The new system will:

- utilize the existing state mainframe computer system located in Helena, department personnel and state supported software for development.
- track a DFS client from the initial referral through all services received until the client case is permanently closed.
- provide caseworkers at the county level the ability to enter required data online thus reducing the burden created by numerous paper forms, and a computer database to assist with day-to-day functions.
- provide management at the county and regional levels with an automated means of reviewing cases to ensure all cases are being handled according to policy.
- provide management in the central office with a comprehensive source of data that can be used to generate summaries, projections and analyses for effective statewide program management and to meet all state and federal reporting requirements.

Involvement in the development of a child care information system will be undertaken this biennium. All child care programs administered by DFS and SRS will be included. The system will include provider licensing, client certification and monitoring, payment voucher processing and reporting for federal and state requirements.

## **Accomplishments**

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### *Developed new systems to support DFS programs*

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*Developed and implemented a billing system for Medicaid reimbursable case management services delivered to adults with developmental disabilities.*

*Developed and implemented a new random moment time study system to properly utilize and record federal funding sources.*

*Implemented a system to track children under the Interstate Compact on the Placement of Children including those placed in Montana from other states, or placed into another state by Montana.*

*Obtained a system to record and track all DFS equipment, as well as equipment in Mountain View and Pine Hills Schools.*

*Currently developing a system to track financial transactions in trust accounts of foster care children.*

# Fish Wildlife and Parks

## FY94-95 Plans

The department intends to provide improved management of department lands through GIS technology. Site records will be automated in 1994. Boundaries will be digitized and digital data will be purchased from USGS. GIS hardware and software will be purchased to process this information.

A feasibility study will be completed for a comprehensive sportsperson database including automating the issuance of licenses by general license agents. This study could lead to the development of a database of most transactions between the department and a sportsperson. An automated license issuing system, which includes user terminals to transfer the information to the sportsman's database would improve efficiency and accuracy.

It is our goal to continue replacing obsolete PC computers. We will purchase about 30 new computers each year - half will replace obsolete PC's.

It is our goal to expand the statewide data communications network within the department. This communications network will include eight regional offices, some of the field offices, individual wardens and biologists around the state.

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*Improve land management with Geographic Information System (GIS)*

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*Analyze comprehensive sportsperson database needs*

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*Replace obsolete computers*

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## FY96-97 Plans

A result of the study in FY 94-95 could be to implement a comprehensive automated sportsperson database which would allow the department to maintain a record of hunting and fishing licenses, Parks passports, applications for the special drawings, violators, hunter education cards, etc. The database could also be utilized for harvest surveys, fishing pressure surveys, attitude surveys, economic surveys, residency verification and federal aid reporting.

It is the goal of the department to install an interactive voice system. We receive about 70,000 telephone calls each year. Many of the calls are requests for licensing information and could be processed by interactive voice mail.

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*Use interactive voice response (IVR)*

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## Accomplishments

*The department developed GIS for management of the Blackfoot River and the Blackfoot-Clearwater Wildlife Management Area. This capability will be expanded through the purchase of additional GIS software and features.*

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*Implemented GIS for wildlife management*

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*An on-line budget system is under development that will be able to transfer data to SBAS. This system will keep track of funding sources, payroll increases, legislative mandates, etc.*

*We have installed 60 new computers. Some replaced obsolete computers that were no longer adequate for the new, more powerful versions of software. Training sessions were provided with each new installation. The department has about 300 PC's at the present time.*

# **Governor's Office**

## **FY94-95 Plans**

**Replace obsolete computers**

Replace obsolete computers at the rate of 25% each year.

**Develop new budget system**

Provide funding for staff training.

Develop a LAN-based system to replace the current mainframe Executive Budget System (EBS) and the Legislative Budget System (LBS) as a shared development project with the Legislative Fiscal Analyst's office.

**Reduce paper use**

## **FY96-97 Plans**

Replace obsolete computers at the rate of 25% each year.

Develop an electronic system to handle the Governor's correspondence, including archival record keeping.

## **Accomplishments**

*The Executive Office uses a token-ring network and several mainframe systems. Accomplishments fall into three major categories:*

*Network upgrades: We have converted our network from PC Lan to the Novell Netware network operating system to provide more security and better performance. We expanded the network to include all staff of the Governor's office and the Lt. Governor's office including the Budget office and the Consumer Advocate. We added WordPerfect Office electronic mail for all communications and appointment scheduling within the Executive Office. We attached seven network laser printers; these are distributed to make them available and convenient to all users.*

*Equipment upgrades: Our network file server is an old IBM model 80; we rejuvenated it by adding system memory and a large new disk drive (non-IBM). We purchased replacement computers for 7% of our users. We added a tape backup system with off-site tape storage and an uninterruptable power supply (UPS) to our server for disaster recovery. We added a high-speed laser printer for the budget office. We replaced an obsolete envelope printer with a laser printer that has significantly lower maintenance costs.*

*Downsizing: Our major data files are currently on the mainframe computer. We have begun the process of moving computer processing from that setting to less expensive and more convenient settings on our local area network (LAN). We have converted data-entry activity. We have created conversions from mainframe formats to LAN-based database formats for several major files. We have substantially reduced mainframe processing costs and improved access to data for budget analysis.*

# **Health & Environmental Sciences**

## **FY94-95 Plans**

The Department plans to improve its LAN/WAN with new equipment and technology to meet user demands and replace outdated equipment. Imaging technology will be incorporated for retention of original documents, including vital statistics. Optical disk technology will be acquired for storage of large quantities of data.

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*Implement imaging and database server technology*

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DHES plans to fully implement database server concepts and technologies. Current systems require significant time to convert data. Server based databases will enhance data integrity and allow access by SQL compliant software.

Build cooperative systems with County Health Departments and participate in equipment and software installations.

## **FY96-97 Plans**

It is the goal of the Department of Health and Environmental Sciences to implement GIS (Geographic Information Systems) technology. Planning will be conducted during FY94 and FY95. GIS technology will link environmental data with health data in a effort to determine "cause and effect" relationships; and provide an analytical base for analyses and management plans.

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*Use GIS to determine environmental impacts.*

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## **Accomplishments**

*DHES has implemented LAN super server technology with a Tricord Model 40/33 server. It allows for easy, cost-effective expansion of data storage and users and simplifies network administration and management.*

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*Installed super server and CD-ROM.*

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*Server-based CD-ROM is being implemented to give users on the WAN/LAN access to several CD-ROMS. A "juke-box" CD-ROM device has been installed which contains hundreds of megabytes for use by various divisions and bureaus. It will save thousands of dollars vs. workstation CD-ROMs.*

*A cooperative project is underway with DOA/ISD to upgrade and stabilize the LAN/WAN; improve the reliability and accommodate increased use.*

*A LAN-based fiscal management system was developed to expedite processing of collections and transfer of information to SBAS. A LAN-based contracts management system was developed to manage contracts.*

*The WIC (Women, Infants & Children) system upgrade plan was completed and an RFP issued for a new system that will allow the on-line disbursement of funds and help prevent fraud.*

*A Laboratory Information Management System was developed, using SmartLab, to process samples. It will track samples and accommodate the rapidly rising workload. The system will be incorporated into an Advanced Revelation database billing system.*

# **Historical Society**

## **FY94-95 Plans**

### Purchase software to inventory collections

If funded, the Museum program will purchase Dbase software to inventory collections and location files.

The Administration Program has requested a modification for a single user computer with the applicable software to automate the Public Information aspect of the Society. This will include the production of press releases and events. to better coordinate the public events at the Society with Montana's citizens.

### Upgrade network

The Preservation program is requesting a computer network upgrade because the existing networking is too small and obsolete.

## **FY96-97 Plans**

Additional PC's will be needed as workloads in all programs exceed current hardware capacity. In particular, additional PC's are required in the director's and business offices.

The Society plans to acquire desktop publishing hardware and software for publications design, preparation of exhibit graphics and production of publications such as brochures and technical leaflets.

The Archives will complete Phase II of its machine-searchable catalog of holdings. Automated searches will be possible by Library of Congress subject headings as well as by keyword. It will key older inventories into the system as time permits. It will add a special Compact Disc Drive that will be able to input software updates. The Library expects to dismantle its network, discontinue support of Data Trak software, switch to independent microcomputers for functions such as serials control because of lack of funding necessary to support the network. Participation in LaserCat will continue until the Library can obtain on-line membership to WLN. The Historical Society will pursue private funding to automate functions related to collecting, organizing, administering, preserving and presenting Montana's historical and cultural heritage.

## **Accomplishments**

### Created machine searchable index of Archives

*The Archives completed phase I of its project to create a machine-searchable index of its holdings using STAR database on a Sun SPARCstation. All manuscript, state record, oral history and archival microfilm collections can now be searched via keyword at a broad descriptive level. New collections are input directly on the system.*

*The Library continued to use the Novell network and Data Trak specialized library software including processing acquisitions, accessions, serials check in and control. Recently it discontinued accumulation of a local data base, and now does most of its cataloging into the Western Library Network, by means of a microcomputer using the Network's LASERCAT CD-ROM.*

# Judiciary

## FY94-95 Plans

Continued growth in the level of automation within the Montana court system is essential to address growing caseloads and continued restrictive budgets. The courts adoption of automation standards will minimize system incompatibilities and reduce technical support requirements and cost.

Expansion of the current user base is expected to continue, both in networked workstations and standalone units. Expanded use of telecommunications products for remote technical support will reduce travel requirements for technical personnel and enhance system reliability.

Opportunities to exploit statewide resources such as the State Data Network will be pursued where funding is available from local or state sources.

Development of case management modules for criminal cases and citations is planned. Installation of the current civil case management, fee management and jury selection software will continue. Installation of the first phase of the citations system will begin in the near future.

User training will play a major role in the court automation program.

*Continue court automation*

## Accomplishments

*The Montana Supreme Court has been expanding automation. The Office of the Court Administrator currently supports 300 users on 15 local area networks and numerous standalone workstations in over 21 counties. The majority of these systems conform to the Montana Supreme Court Order which mandated standards for all court automation. This standards effort has enhanced the procurement, installation and support of these systems. Close working relationships have been developed and maintained with local elected officials in the funding and acquisition of these systems..*

*Implemented automated systems in 21 counties*

*Except in jurisdictions where local technical expertise exists, Court Services technical support personnel plan, propose, order, configure, ship and install all hardware, software and network components. Training is provided at installation, with follow-up sessions as required. Word processing, spreadsheet, productivity tools, data security, data backup/recovery and virus protection are provided. Standard court documents are provided in for immediate use. Other documents are designed as needed.*

*After the site becomes familiar with the new environment, the case management database software developed by the Office of the Court Administrator is installed. The package consists of civil case and fee management modules. Automated jury selection and restitutions management are also available. A robust citations management database system has been acquired and is undergoing customization and major enhancement for use by Courts of Limited Jurisdiction in Montana.*

# **Justice**

## **FY94-95 Plans**

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***Upgrade law enforcement ability to detect criminal activity***

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***Use voice response and imaging to improve service***

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***Use image technology for fingerprints and photographic identification***

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***Joined network for access to automated fingerprint id system***

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The FBI is completing an upgrade to the National Crime Information (NCIC) system. As a result, law enforcement agencies throughout Montana will have greater capabilities to detect criminal activity in the state and identify those involved. The Department of Justice will upgrade local agency workstations with more powerful personal computers -- an integral element of the NCIC's ultimate plan for image and functional distributed processing. In addition, the Department hopes to secure funding to replace the communications hardware/software that connects CJIN to the NCIC and NLETS systems.

The Motor Vehicle Division will continue to look at ways to improve the motor vehicle registration, titling, and driver license processes in the state. Likely endeavors will include increasing the number of automated driver exam stations, continued enhancements to the Title and Registration Bureau local area network in Deer Lodge, and improved methods for registering and re-registering vehicles. Technologies to be explored include bar coding, voice response systems, and document handling systems.

Agency wide application of imaging and voice response technology is planned.

## **FY96-97 Plans**

Plans include electronic storage of images such as fingerprints, paintings and photographs for transmission through FBI NCIC.

## **Accomplishments**

*The Law Enforcement Services Division has joined the Western Identification Network and now has access to a data base of over 18 million fingerprints through an automated fingerprint identification system.*

*The Vehicle Registration and Titling system is now accessible by all 56 county Treasurers. This has improved the quality and timeliness of record information. In addition, a 50+ workstation network has been installed at the Title and Registration Bureau in Deer Lodge.*

*The Law Enforcement Services Division will conclude a major automation effort. This effort includes automating/networking Division offices in Helena and the Division's regional/field offices.*

*A three-phase U.S to Canada criminal justice information systems interface was concluded by the National Law Enforcement Telecommunications System (NLETS). The appropriate changes were made by CJIN Services to ensure that all CJIN participating law enforcement and criminal justice agencies had on-line access to this valuable information as soon as it was technically possible.*

# **Labor and Industry**

## **FY94-95 Plans**

*Employment Relations* - The Workers' Compensation Automation Project (WCAP) will continue to create a database separate from the State Fund database. Goals are for improved customer service, statistics, compatibility with other systems, and data security. ERD continues to investigate electronic imaging and files management as an option for increasing the speed and efficiency of handling claims. Goals include: reducing misplaced, lost or damaged files, multiple access to a file at a time; and replacement of manual methods. The Wage and Hour Section continues to improve its case tracking systems. ERD plans to make more effective use of hardware and software resources with a newly-installed Novell Netware local area network (LAN).

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*Investigate imaging for claims processing efficiency*

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*Job Service Division* - Job Service will revise its employment services database to enable more efficient file searches of job applicants. This will allow a key word type search using resume or any narrative summary of applicant skills. JSD has received a federal grant to purchase 8 touchscreen kiosks for selected locations. Kiosks are a self-standing "booth" with an installed personal computer and screen to allow job applicants to conduct a search of job vacancies or program eligibilities by touching certain parts of the computer screen instead of the standard keyboard. JSD plans revision to the statewide employment service system to allow selected employers direct access to the on-line system. Employers will also have access to a database of licensed applicants for their specific licensed trades. A direct access link is planned for the University system to review job openings by applicant and place job orders. JSD will expand its efforts to share data and equipment resources with state agencies to eliminate data redundancy, help reduce costs and improve services.

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*Allow employers access to job applicant information*

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*Legal Services* - Legal Services plans to upgrade all its 286 personal computers to 386 or even 486 machines and to network their standalone database for tracking their legal cases. LSD, ERD, UID and Workers' Compensation Court staff plan to network a case tracking database of contested cases from initial request for determination through final resolution.

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*Upgrade older computers; provide network access to databases*

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*Research, Safety and Training* - RSTD plans to network their standalone Job Training Partnership Act participants database and their database of apprenticeship participants. This will allow staff to share and update information, create ad hoc reports, and help with record-keeping for reinspections and compliance reviews. RSTD will continue to update its PCs and electronic capabilities to meet changes in federal contract deliverables required by the Bureau of Labor Statistics.

*Unemployment Insurance* - UID has submitted a federal automation grant proposal to enhance the Tax Accounting system to accommodate audit activity and quality control programs. Automatic voice response systems will be investigated to allow unemployment insurance claimants to request benefits by telephone rather than having to visit a local office or mail their requests. An in-depth analysis of the Benefits computer system is planned to study benefits of newer database technology. Imaging technology is being researched as a viable option for replacing the Benefits claims paper filing system.

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*Investigate use of voice response to answer benefits questions*

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*Determine feasibility of new agency administrative support systems*

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*Human Rights Commission* plans to upgrade its NCR computer case tracking system to permit direct electronic communication with HUD and to implement telephone voice mail.

*Workers' Compensation Court* plans to replace its older model personal computers with 2 newer PCs in FY94 and 1 PC in FY95 and plans to purchase one laptop computer for use by Court staff when traveling.

The *Commissioner's Office* is currently studying the feasibility of providing agency-wide direct access to requisition and purchasing, maintenance tracking, training records, and a travel tracking on-line systems. Actual systems to be developed in FY94/95 depend upon results of the feasibility studies and agency needs analysis. In response to division requests, the Office of Information Services is currently testing the feasibility of providing access to the Montana Code-Annotated via the network, using CD ROM as the storage medium. It is anticipated the MCA will be available in early FY94. OAS will fully network their accounting section to take advantage of server-installed LOTUS 3.1 software.

## FY96-97 Plans

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*Implement imaging system*

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ERD hopes to implement an electronic imaging and file management system throughout its offices. They will work with workers' compensation insurers in a greater effort to share information electronically. The goal is to reduce potential delays which negatively affect Montana employers and employees through better use of computer information systems.

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*Install additional job service kiosks*

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JSD will review advantages of an optical scanning process to further enhance applicant abilities to create resumes, conduct searches and referrals. JSD envisions processing of data at the local offices on networked workstations. JSD hopes to receive federal grant monies to purchase and install additional touchscreen kiosks for applicant convenience and self-help.

LSD plans to continue PC Upgrades to 486 machines and purchase additional Laptop Computers, one for every 2 attorneys and hearing officials.

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*Implement agency administrative support systems*

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The Apprenticeship Bureau of RSTD hopes to network all bureau PCs to fully-integrate JTPA, Apprenticeship and administrative management.

UID plans to re-engineer the Benefit System. and implement Imaging Technology.

The Commissioner's Office hopes to develop and implement agency-wide direct access, on-line administrative support systems to fully exploit the advantages of the department networks.

## Accomplishments

ERD and OIS have worked jointly to develop goals for how workers' compensation data is to be used and integrated with other ERD functions into a management information system. The Wage and Hour Section converted three older Cornerstone software databases to DataEase software databases.

JSD received a federal automation grant of \$1,000,000 to replace outmoded equipment and convert to a statewide system. Over 300 terminals and 5 minicomputers were replaced by PCs connected to the state mainframe. All programs and data were moved from the regional minicomputers to the mainframe computer for a truly statewide employment service system. JSD is completing plans to share job openings with neighboring states.

LSD has purchased four 486 machines to replace the old XT model machines and laser printers for use by attorneys, hearings officer and administrative staff. The Case Tracking System was recently converted from the old Cornerstone software database to DataEase software.

RSTD's Safety Bureau automated the licensing of boiler, crane and blaster operators. It is networked with the Accounting Section providing data entry, fee collection, audit trails, and management reports. They have also completed converting old Wang PC software databases to an IBM PC software database and to allow for automatic printing of boiler certificates.

A Washington State-developed, compliance-level, statistical database for Montana JTPA clients was implemented.

Research and Analysis Bureau has installed an ES202 PC system exportable to Montana employers. The ES202 system provides the capability to more easily process quarterly employment and wage data, produce a wide variety of reports, and to reduce dependency on the Tax Accounting System.

UID has completed its long-term project to replace old coax wire with local area network (LAN) cabling and to fully implement networking. The UID network replaced dumb terminals with networked personal computers.

HRC acquired a Facsimile Machine and completed their project for networking all Commission staff and for upgrading three, 286 PCs with 386 machines. The NCR computer system was upgraded with a new Tower 32/600 system provided by EEOC. HRC installed on-line access to LEXIS.

WCC upgraded to WordPerfect 5.1, installed a facsimile machine and trained all staff.

Commissioners' Office. OBP has completed networking all four staff. OIS has experimented with several CASE packages: Easy-CASE for creating diagrams; MicroFocus WorkBench for debugging COBOL programs at the PC; Excelerator software for re-engineering or re-structuring COBOL programs; and CSP-AD for developing and generating Cross System Product (CSP) programs at the workstation.

Updated to truly statewide employment service system

Updated older hardware, software, and wiring systems

Implemented systems for JTPA, employment and wage data

# **Legislative Auditor**

## **FY94-95 Plans**

### **Continue Office Automation Plan**

The Office of the Legislative Auditor plans to continue implementation of the Legislative Branch Computer System Planning Council's "Office Automation Plan." This plan recommends that the Legislative Branch take the following action:

- Implement a branch-wide integrated LAN.
- Centralize File Server management and support.
- Use a central support staff for branch-wide office automation.
- Select and use similar software packages.
- Establish a minimum hardware configuration for workstations.
- Adopt equipment replacement criteria and establish a standard equipment replacement plan.
- Jointly prepare and present its budget request for office automation.

Plans include expansion of the office's capabilities on the state mainframe and its use of the SBAS and PPP files for financial analysis in the agency audits. Use of microcomputers for agency financial analysis including downloading SBAS data by agency will be expanded.

## **FY96-97 Plans**

### **Improve techniques and efficiency**

Expand use of computers to improve auditing techniques and efficiency. Maintain trend information for analysis of state expenditures and revenue generation.

## **Accomplishments**

### **Used state network to access office from audit sites**

*The Office of the Legislative Auditor successfully maintains a LAN with 30 workstations in the office and auditor access across the State backbone. In this biennium the audit staff working at various agency audit sites were attached to the office LAN via the state backbone. This improved productivity by allowing the transfer of information easily without travel time to and from the office.*

### **Completed EDP audits and statewide survey**

*The office upgraded the LAN operating system and several other software packages to take advantage of new technology.*

*The office expanded its use of the mainframe by enhancing programs used to evaluate the agency financial information maintained on SBAS and PPP.*

*The office issued two EDP audit reports on agencies use of information resources as well as a statewide survey on computerized information resources in state government.*

# **Legislative Council**

## **FY94-95 Plans**

Move toward one word processing/text database management system. The office uses WordPerfect for its correspondence, reports etc., and TextDBMS for session functions such as bills. The enrolling and engrossing of bills, the creation of Session Law and the MCA update process will be moved to WordPerfect (if technical details can be resolved) resulting in cost savings in user support and software maintenance fees.

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*Use WordPerfect for all word processing*

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Produce all parts of the CD-ROM process for Legislative Publications in-house. Including making the databases searchable, preparing the correct format, and manufacturing the CD-ROM. Part of this goal includes adding more databases to the CD-ROM. MCA with Annotations is on CD-ROM. Potential databases to be added are the MCA Index, Session Laws, text of Bills, Session Index, House and Senate Journals, Combined Final Status and committee minutes.

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*Expand use of CD-ROM*

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Convert the Legislative Council from OS/2 LAN Server to Novell Netware as the LAN operating system.

Continue LAN maintenance and upgrades. Tasks include replacing obsolete workstations, upgrading software to current releases, ensuring adequate backups, UPS and other recovery procedures for the file servers, upgrading the LAN software, and upgrading the file servers with memory and hard disk.

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*Evaluate use of Graphical User Interface*

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Evaluate new PC operating system software (Windows or OS/2) to determine if this technology can be used to benefit the Legislative Council.

Evaluate converting all PC database programs written in dBase to the new database standard. Perform the conversion if the evaluation is successful, and resources and funding are available.

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*Provide leadership and assistance for Legislative Branch planning*

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Depending on resource availability, staff will investigate improving the public access features of the Bill Status System.

A training function will be maintained for the data processing and user staff.

An in-house data processing directional committee will be responsible for the following: developing and implementing standards and procedures for security, back-up and disaster recovery, naming conventions; evaluating and planning for hardware and software purchases, implementations, and training; evaluating and setting priorities for new data processing projects.

The Legislative Branch Computer System Planning Council will continue to provide Branch leadership in automation planning.

Assist the House and Senate in planning and implementing a computer system for use by legislators.

## FY96-97 Plans

Implement use of computers by legislators

During the FY92-93 biennium, the Legislative Branch Computer System Planning Council conducted a study on use of computers by legislators. This study was requested by the legislature in HJR 23. It is anticipated that the legislature will use a phased approach to implement usage of computers by legislators with each phase adding more legislators onto the network. It is unknown at this time how long it will take to attain full implementation of this system. HRJ23 calls for implementation to begin for 1995 Legislative session.

Installed GIS

### Accomplishments

Installed E-Mail for enterprise use

*Procured and installed an automated GIS system to support the reapportionment process.*

Cooperated with legislative branch agencies for coordinated planning

*Completed the final phase of converting the MCA update process from ALTER to TextDBMS.*

*ZIP!Mail (the state standard E-Mail software) was installed for the entire legislative branch. All agencies now have an efficient means of communicating within the branch and to other state agencies.*

*Continued to move functions from the mainframe to the network. The MCA text and index were made searchable on the file server using Folio Views software.*

*In conjunction with other legislative branch agencies, moved toward coordinated (and centralized) planning, implementation, budgeting, and procuring of network-related functions and services for the legislative branch.*

*A study on use of computers by legislators was conducted for the Legislative Branch Computer System Planning Council.*

*Provided an exceptionally stable, reliable LAN for the legislative session and interim needs of the Legislative Council, Environmental Quality Council, House of Representatives, and Senate.*

*Completed conversion from a stand-alone File Management System to a server-based system. The system (developed in-house with WordPerfect macros, dBase programs and R&R reports) is an integrated set of tools for the staff to use to manage documents. The system transfers files from the creator to central word processing; notifies the staff of editing and finalization requests; stores, archives and deletes files; and tracks and reports the status of files in the system.*

*Added additional information to the Bill Status System to assist with tracking requested bill drafts.*

# **Legislative Fiscal Analyst**

## **FY94-95 Plans**

Work with the Legislative Council and the Office of the Legislative Auditor to convert the Legislative Branch to Novell Netware to comply with the statewide standards.

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### **Convert to standard LAN operating system**

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Analyze alternate methods for committee presentations incorporating various software and hardware.

Continue to analyze software and hardware options for more efficient methods of publication of major documents.

Continue to provide timely responses to legislative demands for analysis and reporting of information bearing upon the financial matters of the state and policy matters of statewide importance.

Continue to provide increasingly more effective tools for legislative fiscal analyst staff in support primarily of the Legislative Finance Committee and the Revenue Oversight Committee.

## **Accomplishments**

*With increased information processing capabilities, the LFA was able to meet demands for analysis and reporting of the state's financial situation as support staff for legislators and legislative committees during one regular and two special sessions.*

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### ***Installed E-Mail***

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*A record number of policy issue and budget status reports were produced for legislative committees.*

*Responded to a record number of legislative requests from individual legislators.*

*ZIP!MAIL was installed and is being utilized.*

*Increased efficiency of the budget analysis system being used in the analysis of the Executive Recommendation for the FY94-95 biennium.*

# **Livestock**

## **FY94-95 Plans**

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*Expand network capabilities between Helena and Bozeman Lab*

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*Plan upgrade or replacement for old computers*

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*Study feasibility of mid-range computer*

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Connect the network in Helena to the network at the Diagnostic Laboratory in Bozeman. This will allow the network to be administered from the Helena office. Files and programs will be able to be transferred from office to office.

Redesign the serology system so that it will meet the needs of the Helena office and the Diagnostic Lab on a timely basis.

Continue to develop the 'backbone" computer system at the Diagnostic Lab in Bozeman. This system will give a comprehensive picture of each sample as it is processed in each of the lab sections.

Install PC's in the offices of the State Veterinarian and Assistant State Veterinarian to give them immediate access to systems regarding animal health.

Design and implement a PC based system for maintaining and reporting information derived from meat inspections that are performed. This system would report on activity at slaughter, processing, and custom-exempt plants.

Implement a plan to upgrade/replace the market PC's over the next several years. Processing speed will be increased as well as the ability to execute larger programs.

## **FY96-97 Plans**

Pending a feasibility study in FY93 and FY94, we may install a mini-computer for the department and move all applications from the mainframe to it.

Continue to design and implement in-house systems as requested.

Maintain and upgrade in-house systems as requirements, access, and technology changes. Future systems may serve needs across several state agencies.

## Accomplishments

Installed a PC based system to track animals imported into Montana and any associated quarantines. If a disease outbreak occurs in Montana or out of state, this system will provide timely and comprehensive information on the movement of animals in Montana.

Installed Novell 3.11 network operating systems (NOS) in the Helena office and at the Diagnostic Lab in Bozeman. All of the users from the previous NOS were converted and given appropriate access to departmental systems.

Installed tape backup systems for both networks to centralize the backup procedures and simplify the restoration processes.

Installed PC's in the remaining three markets - Chinook, Glendive and Baker. All markets now have access to up-to-date information regarding brand ownership and mortgages.

Wrapped up the rerecord of the registered livestock brands. A total of 48,895 producers either recorded new brands, transferred, or rerecorded their brands. 15,373 recordings were released to the public after the rerecord was officially over.

Continued to enhance the reporting and retrieval capabilities of the Receiving System at the Diagnostic Lab in Bozeman.

During FY92 and FY93 eight new users were connected to the Helena network and given access to departmental and state-wide applications. Three personal computers were installed for the veterinarians at the lab and connected to the lab network.

Installed uninterruptible power sources (UPS) on critical data entry computers on the Helena network. These UPS's give users time to exit applications in an orderly fashion before data is corrupted or lost in the event of a power outage.

Wrote a program to print the brand image and brand owner information by the counties that their livestock range. The reports are issued to local inspectors to determine ownership of livestock. The department also provide this information to requesting organizations, such as the Cow Belles or Cattle Women, at the cost of producing the report. These agencies use the report to create local brand books.

Installed PC's in livestock markets for access to brand and mortgage information

Completed rerecord of brands

# **Military Affairs**

## **FY94-95 Plans**

*Investigate LAN feasibility for additional offices*

Investigate the possibility of installing Local Area Network(s) in Operation and Support and Disaster and Emergency Services.

Keep current with new versions of software.

## **FY96-97 Plans**

Integrate LANS within the department and establish electronic communication with the field offices of the Veterans Affairs Division.

## **Accomplishments**

*Installed E-Mail*

*Installed ZipMail for electronic mail.*

*Purchased two computers. One was a replacement and one was new.*

# **Montana Arts Council**

## **FY94-95 Plans**

*Study feasibility of imaging technology*

The Council plans to acquire two letter quality printers for workstations that now have no printers.

## **FY96-97 Plans**

The Council plans to investigate imaging and optical scanning to reduce use of paper.

## **Accomplishments**

*The Council has installed a fax machine and is now able to receive files and faxes.*

# Natural Resources and Conservation

## FY94-95 Plans

Create a digital inventory of Irrigated Lands in Montana - This will involve digitizing existing maps of irrigated lands and satellite image processing.

Obtain and Apply Generic Hydrologic models - Developed both water quality and quantity models with a graphical user interface.

Create a digital inventory of Water Rights data - Create and implement to reduce current manual processing of map related data.

Implement GIS in the Facility Siting program - A third Sun workstation will be installed in the Facility Siting Bureau for processing applications.

Improve GIS capabilities and usage - A Mac SE 30 will be linked to a Sun workstation to enable desktop, pagesize GIS mapping. Interactive irrigation design will support reserved water rights negotiations and litigation.

Improve the Oil and Gas Production system - Data presentation on the screen and on reports will be enhanced. User access will be improved.

Assess needs and develop a risk-based data management system for Injection wells.- The Division has a grant from the Underground Injection Practices Foundation which will fund, develop and implement this system.

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*Implement and improve  
GIS capabilities*

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## Accomplishments

Converted Loan and Grant system from RBase on a Token Ring Network to the Micro Vaxcluster resulting in improved capabilities and access.

Developed and implemented a Treasury Deposit system for automated handling of daily receipts in all DNRC offices.

Updated the National Inventory of Dams data base.

Initiated the process to acquire federal funding for GIS in Facility Siting.

Installed two Sun Sparc Stations for GIS systems in Water Management and Reserved Rights Compact Commission. These systems are linked via ethernet with PCworkstations for expanded availability for staff.

Implemented electronic mail, calendaring and bulletin boards for all Water Resource offices and electronic mail for the rest of the Department.

Utilized spreadsheets and financial modeling projects including Natural Gas management, Bond refinancing, irrigation project feasibility, etc.

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*Installed GIS*

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*Implemented E-Mail*

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*Connected all water resources regional offices to mainframe*

Enhanced Water Rights Records and Oil and Gas Production IDMS systems to facilitate improved access and revised reports to meet current needs.

Obtained a connection to the State PC backbone network for access to TAB. This will allow IDMS and ADS-O development on PC's for DNRC's mainframe applications resulting in significant savings.

Developed a system on the Micro Vax Cluster using RJE for mainframe job submission. This eliminates TSO library disk storage and keeps users from submitting JCL errors - resulting savings and more efficient production.

All Water Resources regional offices obtained electronic connections to the ISD mainframe for access to the Water Rights Records system for query and update resulting in improved productivity of Regional operations.

# **Office of Public Instruction**

## **FY94-95 Plans**

During fiscal years 94-95 the Office of Public Instruction will continue development of the METNET Bulletin Board System and computer networks located in the METNET regional training centers.

Administrative networks within the Office of Public Instruction will be expanded to allow electronic transfer of data between OPI and Montana school districts.

Course development activities will be conducted in the METNET program. Agencies participating in METNET will sponsor training using the distance learning tools available through the METNET program.

**Continue METNET development**

## **FY96-97 Plans**

During fiscal years 96-97 the Office of Public Instruction, as a METNET partner, will continue to implement and refine distance learning courses developed during the 94-95 biennium. Courses of instruction for students as well as teachers will be offered using METNET. OPI will work toward interfacing distance learning courses, operating on fiber optic networks, with compressed video based courses in operation across the state.

In addition, OPI will continue the expansion of electronic communication capabilities with school districts. OPI will look toward reducing communications costs in postage, mailing and travel through the use of electronic communication capabilities.

**Implement and refine distance learning courses**

## **Accomplishments**

*Initiated and completed development of 15 regional nodes of the METNET bulletin board system. Provided training to METNET users as well as system operators statewide.*

**Completed BBS implementation at 15 regional sites**

*Initiated and completed development of 15 computer networks in 15 regional METNET training centers located in K-12 and Higher education sites. Installed hardware, software and provided network administrator training to regional sites.*

*Completed development cycle on 155 PC computer wide area network located in five separate OPI administrative staff locations*

# **Public Service Commission**

## **FY94-95 Plans**

*Convert from mid-range to personal computers*

Agency-wide conversion from a mid-range computer platform to a local area network; subsequent bridging to the wide data network.

Transfer Motor Carrier data and programs from the State computer to the agency computer system.

### **Accomplishments**

*Completed the automated Case Management system.*

# **Revenue**

## **FY94-95 Plans**

Implementation of a Interactive Voice Response (IVR) capability.

Implementation of Electronic Business Tax filing for Income Tax Withholding.

Implementation of electronic tax payments using Electronic Funds Transfer (EFT) standards.

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*Implement voice response, electronic business tax filing, and electronic funds transfer*

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## **FY96-97 Plans**

Pilot Imaging project.

Expansion of Imaging and Intelligent Character Recognition (ICR) technology to Income Tax processing.

Expansion of Electronic filing to all Business Taxes and Individual Income Tax.

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*Pilot an imaging technology project*

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## **Accomplishments**

*Developed and installed a major enhancement to the Withholding System to include the Worker's Compensation Payroll Tax.*

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*Included Workers' Compensation Payroll Tax in Withholding System*

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*Developed and installed the first phase of the Business Equipment Valuation System (BEVS) to track and value business equipment properties for the State.*

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*Defined requirements for new systems*

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*Performed a major project to remove the Motor Fuels, Revenue Control, and Accounts Receivable Systems from the Department of Revenue's integrated database so that they could be operated by the newly formed Department of Transportation.*

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*Expanded Individual Income Tax System*

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*Developed requirements definition for an automated Abandoned Property System (APS).*

*Developed requirements definition for an automated Inheritance Tax System (ITS).*

*Developed further functions for the Individual Income Tax System including expanded on-line entry capability, management reporting, statistical reporting, and estimated payment tracking.*

# **Secretary of State**

## **FY94-95 Plans**

### *Study use of imaging technology and corporate and UCC system improvements*

Continue research and development of a computerized imaging system and an in-house computer system for the corporate and UCC filings of the office.

Upgrade the current Novell network to increase disk storage.

Continue to further enhance all data base programs in the office.

Develop a Records Storage and Retrieval data base program for the Records Management Bureau.

## **FY96-97 Plans**

Review the possibility of providing public access to corporate records and Administrative Rules.

## **Accomplishments**

*The Secretary of State has worked to further streamline operations through the use of technology.*

*The management of the Records Management Bureau was assumed from the Department of Administration and a computerized accounts receivable system was put in to place for microfilming and records storage.*

# Social and Rehabilitation Services

## FY94-95 Plans

Develop an interface to exchange information between TEAMS (The Economic Assistance Management System) & SEARCHS (*System for the Enforcement and Recovery of Child Support*).

Install the Passport to Health Program to automate the selection and tracking of medical providers for public assistance applicants and recipients.

Study the feasibility of implementing Electronic Benefits Transfer for the dissemination of public assistance benefits.

Evaluate technology (imaging, voice response units) as a means of increasing productivity while reducing FTE's.

Successfully implement and install SEARCHS computer system meeting the federal requirements for certification.

Install local area networks in the Child Support Regional Offices.

Purchase and install a dedicated database server.

Expand the JOBS system to include electronic interfaces between the TEAMS, Department of Labor and Industry wage match files and State Workers Compensation files, address federal requirements, and include security and data integrity features.

Complete the analytical and design phases of the Client Database system redesign to eliminate mainframe operational costs in excess of \$98,000 per year.

A system for processing drug rebates will be implemented on a microcomputer. Over the next biennium the combined rebate systems will recover approximately \$5,200,000, of which the state will retain \$1,411,000. System development costs are estimated at \$30,000, with a yearly operational cost of \$14,250.

Expansion of the SRS training program to include mainframe applications and appropriate microcomputer usage.

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*Study use of electronic benefits transfer*

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*Evaluate use of imaging and voice response*

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*Implement exchange of information among SRS systems and other agency systems*

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## FY96-97 Plans

Use of appropriate technology to promote a better workplace.

Integrate JOBS and SEARCHS with TEAMS.

Implement electronic benefits transfer for TEAMS.

Develop advanced use of voice response systems and imaging.

Use teleconferencing for training and meetings.

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*Use teleconferencing for training and meetings*

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## **Accomplishments**

**Implemented TEAMS  
on time and under  
budget**

**Initiated system  
development for  
SEARCHS**

*TEAMS provides eligibility determination for Food Stamp, AFDC, and Medicaid programs and issues benefits for 70,000 citizens. Its also serves as a case management tool. TEAMS is the largest computer system to be installed in Montana state government - it will generate \$2 Mil. in savings in 1992, and \$3.4 Mil. in 1993. SRS hired a contractor with experience in public assistance systems. This contributed to the overwhelming success. The project, expected to cost \$13 million, was completed for \$10.4 million.*

*SRS installed 300 microcomputers in the welfare offices statewide. A help desk for users was established to provide: mainframe communications, answer questions, and coordinate problem resolution. A training room was set up for microcomputer training including TEAMS..*

*An RFP for SEARCHS was released in May 1991. A contract was awarded to BDM Management Services Corporation. Implementation is planned for May, 1993. The SEARCHS computer system will impact approximately 40,000 Montana families by helping caseworkers deliver child support collections in a more expedient and efficient manner. SEARCHS will interface with other databases to locate absent parents and their assets, and enforce orders for child support.*

*The Department has implemented over 50 enhancements to the MMIS (Medicaid Management Information System). They have improved efficiency and contained costs while maintaining an excellent rating under Federal Systems Performance Review.*

*SRS has provided support for the current Child Support System. A statewide on-line input and processing for the Low Income Energy Assistance Program (LIEAP) system was completed. A data entry system was installed on microcomputers, eliminating expensive to maintain data entry machines.*

*An initial requirements analysis document of the Department's Client Database System which provides vendor payment and tracking services for multiple divisions was completed.*

*A systems development methodology and a project prioritization process was established. One FTE was reclassified as an agency security officer. A comprehensive security policy and a security tracking plan is being developed.*

Installed hardware and software with speech synthesis

*Microcomputer Applications are used to:*

- tracks participants for the Job Opportunities and Basic Skills Program,
- project forms utilization for ordering standard forms,
- tracking status information on claims for audit purposes,
- access Medicaid paid claims for statistical and reporting purposes,
- provide low income pregnant women with early prenatal care,
- verify health insurance, track trauma cases, record pay and chase payments from other third parties,
- monitor microcomputer problems and resolutions,
- calculate interest, print a payment and amortization schedule,
- provide for quick access to over three years of Medicaid payment data using a PC based decision support system and WORM drive, and
- manage a long term care database for the nursing facility reimbursement system.
- project Medicaid and AFDC benefits for management and budgeting purposes.
- develop graphic representation of program performance indicators for Medicaid utilization, AFDC, general assistance, and food stamps.
- manage vacancy savings through comprehensive payroll analysis.
- produce monthly budget status reports and analyze SRS' \$45 million operations budget.

*LANS were installed and maintained for the SRS Building, the Helena Child Support Office, and the SEARCHS office for the benefit of 200 users. A 4 megabits per second bridge to the mainframe was installed. A backbone was installed in the SRS Building and the Thriftway Building to allow microcomputers to access to a remote mainframe via a gateway for MMIS.*

*Hardware and software designed to scan printed material and read the material aloud using speech synthesis was installed for a blind employee.*

*Telecommunications for the Handicapped provides equipment for hearing and speech impaired individuals. 618 applications have been received and 494 pieces of equipment have been distributed. A telephone relay service has been implemented and is processing three times the projected number of calls.*

# **State Auditor**

## **FY94-95 Plans**

### *Upgrade to Graphical User Interface*

Upgrade hardware for Windows environments and network to 16mb token ring.

Retrofit data bases as Entity Driven, Object Oriented Management Systems.

Implement an approved SQL table and driver, together with server resided access and platform access tables so the data architecture is more easily integrated with national regulatory repositories.

Implement X.25 server technology for improved integration to CRD (Securities).

Implement CD-ROM LAN Server technologies.

Establish a support structure that assists with collecting, storing, processing, and distributing all forms of information and improve productivity in the office.

## **FY96-97 Plans**

### *Implement imaging technology*

Pursue imaging, fiber optic cabling, and upgrading Servers/workstations.

Keep pace with National Regulatory Repositories.

Continuing service and support.

## **Accomplishments**

### *Upgraded computing platform from mid-range to personal computer and LAN*

*Obtained authority for FY92-93 to phase out midrange Wang VS-65. Purchased equipment to provide access to data bases on a single platform, system security, redundancy and fault tolerance for the new LAN. Downtime for this system has been limited to under 1 hour every 5 months.*

*The State Auditor's LAN is accessible via the State Data Network's Backbone which enables agencies to utilize data access/transfer as needed.*

*Converted existing data from the Wang and integrated it to an Office Wide series of data bases which are actively used by the pertinent divisions of the State Auditor's Office. Data Base software improved data access, screen visuals aid support, data entry and data retrieval times.*

*By using reliable and low priced PC technologies, over \$20,000 in maintenance costs were saved by replacing the WANG in FY92 & 93.*

*Reduced time needed for data entry by using electronic data transfers.*

*Reduced paper costs by printing most forms from blank paper stock.*

*Established the capability for public access to State Auditor's records on a variety of commonly used medium.*

*Utilized the SDN to access national regulatory data repositories to improve decisions regarding licensing for Securities and Insurance.*

# **State Library**

## **FY94-95 Plans**

*Library Development* - Link the on-line library systems to allow user access to collections from one terminal. Library Development plans that the state's public libraries will be an active, integral part of METNET.

Explore multiple linkages and increase communication among all types of libraries via METNET, MUSENET, and Internet.

Coordinate library automation by assisting in purchasing computer equipment, and conducting statewide training in computer technology.

*Information Resources* - Plan for an integrated system for the Montana State Library which would automate such functions as circulation, overdues, periodical check-in, on-site and off-site public access catalogs.

Explore methods for acquisition and dissemination of state documents in electronic format.

Continue to explore electronic methods for improving linkages among state agency library collections via the capital complex network and/or other means.

*The Library for the Blind and Physically Handicapped (LBPH)* - Expand the LAN to include all microcomputers in LBPH and include access to the WLN catalog either on-line, or via CD-ROM. Install word processing and data management software on the file server and make these accessible to all workstations. Acquire a Braille printer and software.

*Natural Resource Information System* - Improve information delivery services of Natural Resource Index, Natural Heritage Program, Water Information System, and GIS.

Expand the installed base of libraries using the ArcView<sup>tm</sup> GIS interface, develop support to maintain the databases and provide training to the users. Develop geographic information system capabilities and databases which link into the state network for electronic transfers with agencies and universities and on-line access to the NRIS system.

Incorporate the Drought Monitoring System into overall program of information management and dissemination.

Continue to convert the Montana Natural Resource Index to WLN to provide ready access to natural resource information.

Work with ISD to develop a mechanism to provide GIS developmental and technical assistance services to state agencies.

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***Explore communication among libraries***

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***Automate library function***

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***Expand library access for Blind and Physically Handicapped***

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***Expand availability of GIS capability***

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## FY96-97 Plans

### Increase access to natural resource information

*Natural Resource Information System* - Improve delivery services for the Natural Resource Index, Natural Heritage Program, Water Information System, and Geographic Information System.

Continue to identify and implement methods to increase access to natural resource information. These methods will include more hands-on systems for the public and more on-line access to NRIS information.

Develop and expand GIS capabilities and services through more efficient and powerful hardware and software.

### Establish networks for all libraries in the state

*Library Development* - Establish networks as effective alternatives to meetings and as resources for all libraries in the state for information concerning library issues, employment opportunities and state-of-the-art techniques in Library Science.

*Information Resources* - Offer more reliable access to Montana agency publications and facilitate access to other government information by maintaining current cataloging status for new publications, increasing FTEs for retrospective conversion of older publications, and contacting agencies to insure that new publications are included in the state library's collections.

Make LAN E-Mail accessible to the entire agency.

## Accomplishments

### Obtained grant funding for hardware

*Library Development* - Acquired a LSCA grant for the following: a laser printer, an Apple Macintosh desk-top publishing station, a lap-top microcomputer, and LaserCat CD-ROMs to train Montana's librarians.

Added an internal FAX board to the Coordinator's microcomputer.

Assisted in the development of a project funded with LSCA monies to install 55 LaserCat stations in Montana's libraries.

*Library Development and the Technology Committee hosted a symposium, "Self-Determination or Self-Destruction?" to confront the question of whether or not there will be a network of Montana libraries. Attendees selected two goals: universal access to information, and standards.*

*Information Resources staff cataloged new state publications in WLN and OCLC data bases. Information Resources provides machine-readable catalog records, electronic access to state publications, nationwide library access to state publication cataloging records and electronic access to Montana's name authority records through the Library of Congress' Linked System/Name Authority program.*

*Library for the Blind and Physically Handicapped acquired an uninterrupted power source (UPS) for each work station and file server via donated funds.*

*LBPH also updated its Novell software and file server.*

*Natural Resource Information System - Migrated from a mini-computer base to a local area network of UNIX graphics workstations. The Geographic Information System (GIS) software and UNIX operating system were upgraded.*

*The Drought Monitoring System was designed and successfully implemented*

*Began migration from the in-house Montana Natural Resource Index (MNRI) to the more powerful and more accessible WLN library network.*

*Developed PC software to query and generate reports from groundwater data from the Montana Bureau of Mines and Geology - Ground Water Information Center (MBMG -GWIC). The product has been well received and is being distributed by MBMG GWIC.*

*Provided programming services to Fish, Wildlife and Parks to create an edit/entry system for the Montana Rivers Information System (MRIS). The system is used to update the FWP fisheries data base and in turn to update the MRIS.*

*PC Master Water Data Index was recently enhanced by restructuring data storage so that USGS can distribute data to patrons with limited disk space.*

*A graphical display interface (GDI) was developed for ARC/INFO GIS. This interface allows faster and easier queries of the GIS databases and easy report/map production. The GDI has been implemented by many agencies.*

**Upgraded mid-range computer to local area network and workstations**

# **Transportation**

## **FY94-95 Plans**

### **Convert to metrics**

The Department (MDT) will convert to metrics as required by the Federal Government. This will impact almost all of MDT's systems. A major programming effort will be required.

### **Upgrade district and area computer for standardization**

CADD will be expanded to include as-built project data. This will allow MDT to electronically archive and back-up this data off-site. This will also allow MDT to include this data in its records management program.

VAX servers will be provided to the districts and areas to facilitate access to data and to serve as back-up systems. This will also allow MDT to move toward a standard networking protocol. MDT is continuing its movement toward establishing shared data bases across applications. For example, MDT's Pavement Management and Bridge Systems will be integrated allowing access for CADD purposes as well as executive information purposes.

CADD work stations will be added to fully automate road design and right-of-way design activities in order to better meet the delivery of MDT's expanding construction program.

Plotter hardware and software will be updated to provide greater capacity, to meet an increased CADD demand and to eliminate hazardous substances currently used in plotting.

MDT will move toward the TCP-IP Protocol for its wide area network.

## **FY96-97 Plans**

### **Acquire GIS**

MDT will acquire Geographic Information System software and fully integrate it with MDT's major project systems.

MDT's photogrammetry equipment, which is no longer supported by any vendor, will be replaced.

MDT will work toward the implementation of the Intelligent Vehicle Highway System for motor carriers using the State's highways. This system will allow MDT to electronically check motor carriers' weights, licenses and permits as they cross points on the highway.

## **Accomplishments**

*The Missoula, Great Falls, Billings and Glendive districts were added to the MDT's VAX-based departmental computer system through the extended Ethernet wide area network.*

*Global Position System (GPS) receivers were acquired and are being used for highway surveying. GPS is a satellite based measurement system capable of measuring to centimeter precision anywhere in the world.*

*A bar coding system was instituted for taking fixed assets inventory.*

*Electronic communications with the Federal Highway Administration were established. MDT is now directly connected to FHWA's Transportation Computer Center through the AASHTO Value Added Network. FHWA's district office in Helena was added to the State's computer system network, which includes direct access to MDT.*

*The Motor Fuels Tax System was transferred to MDT from the Department of Revenue. This involved a cooperative effort by the Department of Revenue, Department of Administration and MDT.*

*An automated GVW permitting system was completed and implemented in the Department's weigh stations across the state.*

*The first release of a departmental Executive Information System was completed. This system provides management the ability to easily access SBAS, personnel, bill status and highway project information.*

*CADD capabilities were upgraded and improved as follows:*

- The VAX 785 computer was replaced with a UNIX file server, which has greater capacity for supporting more workstations and is more cost efficient.
- CADD workstations were added for training, road design and right-of-way design in order to serve an expanding construction program.
- A pen plotter pilot program was initiated in the Bozeman area office.
- All county maps were digitized on CADD.
- An MDT sponsored highway design section and student internship program was initiated at MSU.

*The Department's Tentative Construction Program and Fund Obligation Systems were rewritten and moved to the ORACLE data base management system on the VAX. This was done to meet the requirements of the Federal Intermodal Surface Transportation Efficiency Act of 1991 and to provide users the information access benefits of a relational data base.*

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**Acquire GPS for highway surveying**

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**Implemented new GVW system**

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# **University System**

## **FY94-95 Plans**

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*Extend MUSENet capabilities and service locations*

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*Coordinate planning and deployment of telecommunications and computing*

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*Achieved exemplary interaction with state agencies*

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*Deployed inter-institutional mail, file transfer, and Internet access*

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The following examples represent just some of the areas which are being undertaken in anticipation of closer links between the campuses, state agencies and school districts:

- Extension of the MUSENet to incorporate the Commissioner's Office, the five Vocational Technical Centers and the three publicly funded Community Colleges;
- Extension of the METNet compressed video network into the cities of Butte, Dillon, Great Falls, Lewistown and others;
- Increased coordination with ISD in the planning, procurement and deployment of telecommunications and computing equipment that is attached to the state telecommunications network;
- Coordination with ISD in the planning and implementation of on-campus, building-to-building telecommunications networks;
- Deployment of voice-mail throughout the system in a manner which is compatible with the ultimate goal of using the network for inter-institutional message forwarding, broadcasting, etc.;
- Where appropriate and cost effective, use of the state telecommunications network to accomplish increased centralization of the data processing functions which are currently duplicated on several campuses;
- Integration of the METNet computer bulletin board system with MUSENet and Big Sky Telegraph; and,
- Enhancement of the Regent's Employees Reporting system (RERS) to enable facile acquisition and review of faculty workload data.

All of these efforts can only be enabled through the cooperation and support of the Information Services Division. The efforts of the Montana Legislature, through HJR 48, to ensure an administrative environment that will foster such cooperativity, and the inclusion of the Commissioner's Office in the State-wide Data Processing Advisory Council (DPAC), has already brought the University System to a level of interaction with ISD and other agencies that is unequaled in most states. The 1993-95 biennium will see those relationships strengthened even further.

## **Accomplishments**

*The 1989-91 and 1991-93 biennia have been pivotal periods for those involved in information systems and their applications to teaching and learning as well as research and the management of higher education in Montana. Before 1989 the individual campuses of the university system*

**Cooperated with OPI to achieve statewide initiatives**

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were virtually technological islands wherein the most obvious and successful applications of computing and telecommunications were intracampus in scope. As faculty and administrators have become more sophisticated in the applications of these tools, however, it has become equally apparent that the inter-institutional, interstate, interagency and international opportunities afforded by innovative applications of these emerging technologies will quickly outstrip the advantages of campus-wide systems.

As an example, when the Montana Legislature mandated the creation of a system-wide "Regent's Employees Reporting System, (RERS)" the innovators in the system, working with the Department of Administration, coupled this initiative with a state-wide effort to deploy inter-institutional electronic mail, file transfer, and real time access to the international computer network called "Internet." In this way "MUSENet," the Montana University System Educational Network, was born.

Similarly, when it became apparent that the educational resources of the state were too scarce to allow the K-12 educational environment and Higher Education to develop their state-wide initiatives separately, the Commissioner of Higher Education and the Superintendent of Public Instruction melded their state-wide initiatives in data, voice and video distribution into a new enterprise called, appropriately, METNet, the Montana Educational Telecommunications Network. In all of these efforts, the Information Services Division (ISD) of the State Department of Administration has played a catalytic role in ensuring that the essential state-wide resources have been available - in the proper place, at the right time, and at a responsibly determined price.

The Commission for Higher Education into the Nineties and Beyond called for the development of a University System plan for applications of telecommunications (implicitly, data as well as voice and video) in distance learning. Their recommendations, virtually concomitant with the release of the consulting firm Lambda Communication's study of telecommunications in Montana, set the stage for the emergence of the University System's participation in METNET. Today, as a consequence of the coordinated efforts of OPI, ISD and the Commissioner's Office, the State of Montana can justly take pride in an emerging network of diverse telecommunications resources which will bring (i) satellite based educational technology to over 300 sites around the state, (ii) interactive compressed 2-way video to six academic locations, (iii) identical, and thereby compatible educational bulletin board services to sites throughout the state, including high schools, colleges, school districts and universities.

As we move into the coming biennium, it becomes increasingly important for the University System to continue working closely with the Department of Administration in the expansion of all aspects of telecommunications.

## **APPENDIX A -- POLICY AND STANDARDS**

**Introduction.** The Department of Administration develops policies and procedures to guide the use of information technology by providing minimum standards for the planning, acquisition, development, security and disposal of information resources. These policies and procedures are documented in the Montana Operations Manual (MOM) and in the Administrative Rules of Montana (ARM). In addition, policies being formulated and additional standards and recommendation may be found in background documents. This section of the technology report summarizes these policies, procedures, standards, and recommendations.

**Montana Operations Manual (MOM).** MOM documents Automated Information Systems policies and procedures to be followed by all state agencies, except the Montana university system and the Office of Public Instruction. The following summarized these policies:

**Control and coordination -- 1-0210.00**

The Department of Administration will insure conformity with the statewide data processing plan and network compatibility by establishing policies, reviewing and approving agency specifications and procurement methods for data processing equipment, reviewing and approving all contracts for private sector data processing services, and operating and maintaining a central computer center.

The Department of Administration will coordinate the Data Processing Advisory Council whose mission is to improve the effectiveness of agency operations and state government as a whole through the appropriate use of computers and information processing technology.

**Information system planning -- 1-0220.00**

Agencies should adopt formal planning and review processes for information systems environments.

**Information system acquisition -- 1-0230.00**

All computer hardware and software procurement shall comply with statute which governs the procurement of supplies and services.

Agencies should develop an information system needs analysis to review data and information management issues, communications, compatibility and software requirements, when planning major improvements to their information systems.

Specifications for procurement of hardware and software should clearly define the unique requirements of the agency without being unduly restrictive.

Agencies should evaluate the available financing alternatives for data processing and office automation equipment, select the most cost/beneficial method, or justify, in writing, the use of another alternative.

Agencies should obtain written approval from the Information Services Division prior to procurement of computers and related hardware and for bids and contracts for private data processing services.

Department of Administration will select and support equipment and software for inclusion under term contracts and require term contract items to be compatible with the state's compatibility standards.

**Software acquisition considerations -- 1-0232.00**

Agencies shall maintain policies and procedures for planning and managing information systems development projects. Software may be procured from a vendor or developed by staff personnel, private sector consultants, or Information Services Division. Planning and managing systems development projects should include the following considerations:

1. Information systems should be designed so that data can be shared.  
Interdepartmental sharing should be considered when developing systems.
2. Although the names of the components may vary, design and development methods should consist of phases and tasks, documentation, and approval points.
3. Software design should describe how the system will implement industry recognized controls.
4. Application specific software should include adequate documentation.

5. Agencies should establish a policy which defines the documentation necessary for changes to production systems.
6. Systems development projects should include consideration for the acquisition of existing software as an alternative to custom written software.

Data processing services procurements should adhere to Management Memo I-88-4-6 which defines selection and use of consulting services.

All purchased software is subject to the Copyright Act of 1976 and the software amendments of 1980 unless otherwise indicated. Each agency should ensure that proprietary software copyright laws are not being violated as a result of an agency's use of that software.

The Department of Administration will provide agencies with support for data processing and office automation software. Emphasis will be placed on support for products that are compatible with the direction of the state communications network. Each software product supported by ISD has been assigned one of four support levels: full; limited; sunset; special case. (Supported products are listed in Appendix B and C).

#### Communication Acquisition Considerations -- 1-0232.00

The following standards for hardware and software procurement must be met for use of the state's telecommunication network.

1. The primary standard used by the state of Montana for distribution of electronic information is IBM Systems Network Architecture (SNA).
2. Data may be transmitted via the network provided it conforms to either Synchronous Data Link Control (SNA/SDLC) or Token Ring (IEEE 802.5) protocols.
3. Network nodes (devices) should be capable of functioning as a physical unit type 2.1.
4. LU 6.2 protocols or Advanced Program to Program Communications (APPC) are used to establish communicating sessions.

Local Area Networks (LAN's) will be managed as an integral part of the statewide telecommunications network. The standard LAN topology is Token Ring (i.e., international standard IEEE 802.5).

1. ISD will purchase and install Token Ring hardware and software components;
2. ISD will provide technical staff to assist agencies with LAN implementation and ongoing changes to the LAN configuration.
3. ISD will provide problem tracking and resolution services designed to maximize the availability and performance of the LAN to the user agency;

Private data networks established for the exclusive use of an agency will not be approved when the routing of the desired service duplicates a capability available on the central facility.

#### Contingency Planning for Information Systems -- 1-0240.00

Agencies shall maintain contingency plans for all information processing centers which support essential functions and critical applications.

ISD will establish and maintain a disaster contingency plan for the central computer facility.

#### Information system security -- 1-0250.00

Agencies shall implement security measures for the protection of their data and information technology resources.

Agencies shall authorize access to their information technology resources by designating certain persons as users and authorizing such persons to access these resources in the manner necessary for performing their duties.

The Department of Administration will allow the general public to access the state telecommunications network and the central computer providing access systems conform to established guidelines.

#### Disposal of information systems -- 1-0260.00

Any system that is no longer needed by an agency should be removed in its entirety from the computer upon which it resides.

**Administrative Rules of Montana (ARM).** ARM documents policy governing acquisition and use of telecommunications systems. The department of administration must approve the installation, modification, or removal of all telecommunication systems.

The state's telecommunications facilities are provided principally for the conduct of state business.

State agencies are individually responsible for enforcing the state's telecommunication systems rules and cost incurred for use of the systems.

The state telecommunication systems are available for use by political subdivisions of the state, subject to authorization by the department of administration based on formal written request by the subdivision.

The state telecommunication systems are available for use by in-state, non-profit organizations which meet specified criteria.

All records of use of telecommunication systems are public documents and subject to review by the public, unless protected by statute.

**Additional policies, procedures, standards, and recommendations.** During the past several years, several white papers and working draft documents have been published to identify directions, policies, procedures, standards and recommendations for the acquisition and management of information technology resources.

Personal Computer Directions. In 1991 a document, entitled Personal Computer Directions for the state of Montana, was drafted to record the basis of several decisions regarding personal computer hardware and software. The following summarizes these decisions:

1. IBM PC/Intel is the standard personal computer platform.
2. New microcomputer acquisitions must be made using the state microcomputer term contracts.
3. Novell Netware is the standard Local Area Network operating system.
4. The state will have an enterprise electronic mail system serving all mainframe terminals, intelligent workstations, and departmental minicomputers. ZIPIMail is the standard for Local Area Network electronic mail.
5. WordPerfect is the standard word processing software.
6. Lotus 1-2-3 is the standard spreadsheet software.
7. DOS is the standard personal computer operating system.
8. Windows is the standard graphical user interface software.

Imaging. In 1992 a draft document was issued to identify standards and recommendations regarding imaging management and technical issues. Imaging system technologies are relatively new with few industry wide standards have been established. The potential savings associated with instituting such imaging technology are tremendous. Imaging system acquisition and management shall follow the standards and recommendations in the working draft Imaging Standards document. The standards and recommendations which have received DPMG and DPAC approval are summarized below:

#### Imaging Standards

1. Optical imaging may be used for the daily management of all records and replacement of short and medium term records. Long term records must comply with records management policy.
2. WORM technology must be utilized for records of legal or long-term value with duplicate disks stored in separate locations. Recycled optical media must not be used for legal, long-term, or required records. When rewritable technology is used, read/write privileges must be carefully controlled and auditable.
3. Optical disks used for legal or long-term storage must be inspected at least annually.
4. Each agency shall adopt a written policy regarding management and administration of its imaging system.
5. All public records to be put on an imaging system must have retention schedules approved by the State Records Committee.
6. Public access to records must be considered, ensuring appropriate security and privacy.
7. Each agency shall maintain system documentation, including operating procedures documentation.
8. Imaging systems must have security which restricts access and prevents retrieval of images or index information by unauthorized personnel.
9. Index entry verification must be performed. Systems must provide C2 level security against update of the index or stored images. Image indexing must be done using an

- American National Standards Institute (ANSI) Standard Query Language (SQL) Data Base Management System (DBMS). The index must be accessible and manipulatable through user written standard application development languages. The index data for the contents for a specific disk must be written at multiple locations on the disk.
- 10. New systems must bridge to other non- proprietary imaging systems. Migration of existing image data to new systems must be carefully planned.
  - 11. Use 5.25 inch optical disks.
  - 12. Systems must support use of intermediate storage devices and provide backup/recovery/restart capabilities.
  - 13. Systems must support the CCITT Group 3 and/or Group 4 standards with no proprietary alterations to the algorithm.
  - 14. Decompression hardware and software must be 100% compatible.
  - 15. Scanning density should be at least 200 dots per inch (dpi) for office documents. Density of 300 to 600 dpi may be necessary for engineering drawings, maps, and documents with background detail. Validate the selected scanning density with tests on actual documents.
  - 16. Systems must support the state/university system Graphical User Interface (GUI) environments.
  - 17. Systems must use state/university system supported networking protocols and have a minimum bandwidth of 10 mbps for LANs and 1.544 mbps for WANs.
  - 18. Systems must in the state/university system Local Area Network (LAN) topologies.
  - 19. Systems must be able to distribute images in CCITT Group 3 or Group 4 FAX (recognizing Group 3 destination) or bit mapped formats.
  - 20. Systems must use non-proprietary file header formats to label digital images. Tagged Image File Format (TIFF) is a de facto standard for file header information. Require a detailed definition of the image file header label structure.

Database Directions.

A draft document has been issued for comment defining standards and guidelines for the selection of database software. It has received favorable comment from DPMG members. It is expected to receive formal approval in February 1993.

Station Wiring.

A draft standard for station wiring has been issued for review and comment. The draft proposes type three UTP, level V cable implementation. This standard has been presented to DPMG for comment and is expected to be approved in February 1993.

## APPENDIX B -- MAINFRAME SOFTWARE

PRODUCT NAME	PRODUCT ID	CURRENT LEVEL	VENDOR
ACF/2		5.2.0	COMPUTER ASSOCIATES
AF OPERATOR		225	CANDLE
ALPHA SEARCH	5736-N14	2.1.1	IBM
ASSEMBLER H (V2)	5668-962	2.1.0	IBM
ASSIST/GT		3.2	GT SOFTWARE
BASIC/VS	5748-XX1	1.0	IBM
BMS/GT		6.1	GT SOFTWARE
BTAM/SP	5665-279	1.1.0	IBM
CA 90 SERVICES		1.0	COMPUTER ASSOCIATES
CA DOCVIEW		1.0	COMPUTER ASSOCIATES
CA EARL		6.0	COMPUTER ASSOCIATES
CA OPTIMIZER		5.1	COMPUTER ASSOCIATES
CA OPTIMIZER II		1.1	COMPUTER ASSOCIATES
CA-1 (TMS)		5.0	COMPUTER ASSOCIATES
CICS	5740-XX1/E	1.7.0	IBM
CICS	5665-403	2.1.2	IBM
CICS CEMT		4.9	MACKINNEY
CICS EYEWITNESS		2.1	LANDMARK
CICS JUGGLER		4.2	SOFTOUCH SYSTEMS
CICS MESSAGE		4.1	MACKINNEY
CICS MONITOR, THE		8.1	LANDMARK
CL-SUPERSESSION		145	CANDLE
CMF (MVS/XA)		2.1.0	BOOLE AND BABBAGE
COBOL OS/VS	5740-CB1	1.2.4	IBM
COBOL II	5668-958/C	1.3.2	IBM
COBOL REPORT WRTR	5798-DYR	2.0	IBM
COMPAREX		7.1.2	STERLING SOFTWARE
CSP/AD	5668-813	3.3.0	IBM
CSP/AD PWS 6171	5668-813	3.3.0	IBM
CSP/AE	5668-814	3.3.0	IBM
DBA TOOLKIT		5.5.1	COMPUTER ASSOCIATES
DCF/BASE	5748-XX9	1.4.0	IBM
DCF/TSO FEATURE	5748-XX9	1.4.0	IBM
DEV TOOLKIT		3.5	COMPUTER ASSOCIATES
DFP/XA	5665-XA3	3.3.1	IBM
DISOSS	5665-290	3.3.0	IBM
DMS/OS		8.1	STERLING SOFTWARE
DSF (XA)	5655-257	1.13	IBM
DYL-DOC		3.2	DYLAKOR
DYL-SORT			DYLAKOR
DYL-250			DYLAKOR
DYL-260		9.5	DYLAKOR
EASYPROCLIB		2.2	COMPUTER ASSOCIATES
EMC2/TAO		3.2.2	FISCHER INTERNATIONAL
EP 3725	5735-XXB	6.1	IBM
EP 3725/3720	5735-XXB	7.0	IBM
EREP	5658-260	3.5.0	IBM
FDR		5.1-15	INNOVATION
FORTRAN/VS	5748-F03	1.4.0	IBM
GDDM/IVU	5668-723	1.1.1	IBM
GDDM/MVS	5665-356	2.3.0	IBM
GDDM/MVS/PCLKF	5665-356	2.3.0	IBM
GDDM/PGF	5668-812	2.1.1	IBM
GENX			THE A TEAM
HCF (V2)	5668-985	2.1.0	IBM
IDMS/ADS-O		10.2	COMPUTER ASSOCIATES
IDMS/CULPRIT		10.2	COMPUTER ASSOCIATES
IDMS/DC		10.2	COMPUTER ASSOCIATES
IDMS/DMLO		10.2	COMPUTER ASSOCIATES
IDMS/ENTERPRISE		10.2	COMPUTER ASSOCIATES
IDMS/IDD		10.2	COMPUTER ASSOCIATES
IDMS/OLM		10.2	COMPUTER ASSOCIATES
IDMS/OLQ		10.2	COMPUTER ASSOCIATES

## MAINFRAME SOFTWARE

PRODUCT NAME	PRODUCT ID	CURRENT LEVEL	VENDOR
IDMS/PERF MON		10.2	COMPUTER ASSOCIATES
IDMS/R		10.2	COMPUTER ASSOCIATES
IDMS/UCF		10.2	COMPUTER ASSOCIATES
INFO/MGMT	5665-383	3.1.0	IBM
INFO/SYS	5665-384	3.1.0	IBM
INTERTEST		4.2.1	COMPUTER ASSOCIATES
ISPF/DM	5685-054	3.3.0	IBM
ISPF/PDF	5665-402	3.3.0	IBM
JES2	5695-047	4.2.0	IBM
LISTCAT PLUS		6.5	MACKINNEY
MARK IV		9.0	STERLING SOFTWARE
MVS/ESA	5695-047	4.2.2	IBM
NCP (ACF) V4	5668-854	4.3.1	IBM
NCP (ACF) V5	5668-738	5.3.1	IBM
NETMON	5796-PPB	2.0	IBM
NETSPY		4.1	LEGENT
NETVIEW	5685-111	2.2.0	IBM
OGL	5688-191	1.1.0	IBM
OMEGAMON		105	CANDLE
PANLINK		3.2	COMPUTER ASSOCIATES
PANVALET		14.2	COMPUTER ASSOCIATES
PAN/TSO		14.1	COMPUTER ASSOCIATES
PAN/SPF		14.1B	COMPUTER ASSOCIATES
PC XFER (3270)	5665-311	1.1.1	IBM
PL/1	5734-PL3	1.5.1	IBM
PM	5798-DQJ	1.4	IBM
PPFA	5688-190	1.1.0	IBM
PSF	5695-040	2.1.0	IBM
PVS	5744-BZ3	1.2	IBM
SAS BASE		5.18	SAS
SAS ETS		5.18	SAS
SAS FSP		5.18	SAS
SDSF	5665-488	1.3.2	IBM
SMP-E	5668-949	1.6.0	IBM
SPSS		9.1	SPSS
SSP	5665-338	3.5.1	IBM
STROBE		8.5C	PROGRAMART
SYNCSORT		3.3CR	SYNCSORT
SYSD		3.3.8	H & W SOFTWARE
TEXTDBMS		3.1	DATA RETRIEVAL
TSO-E (VER. 2)	5685-025	2.3.1	IBM
VPS		5.0.117	LEVI, RAY, & SHOUPE
VTAM (ACF)	V35685-085	3.4.1	IBM

## APPENDIX C -- MICROCOMPUTER SOFTWARE

### NETWORK/COMMUNICATION SOFTWARE

PRODUCT NAME	CURRENT LEVEL	VENDOR
3270 Emulation/Entry Level (2)		IBM
3270 Emulation/Version 3 (2)	3.0	IBM
Crosstalk XVI	3.7, 3.8	Microcom
DOS Requestor (2)		IBM
EXTRA!	1.42	Attachmate
EXTRA! Extended for DOS	2.23	Attachmate
EXTRA! For Windows	3.3	Attachmate
High Level API		IBM
LAN Support Program	1.25	IBM
Low Level API		IBM
Novell IPX	3.10	Novell
Novell Network	3.11	Novell
Novell SNA Products (2)		Novell
OS/2 Communication Manager (3)	1.3	IBM preferred
OS/2 Extended Edition (3)	1.3	IBM
OS/2 LAN Server (3)	1.3	IBM
Panlink	3.2C	Computer Associates
PC LAN Program (2)	1.34	IBM

### APPLICATION SOFTWARE PRODUCTS

PRODUCT NAME	CURRENT LEVEL	VENDOR
Assist Vision	1.2	GT Software
BookManager Library Reader/DOS	1.2	IBM
dBASE III+ (1)	1.1	Borland
DOS	3.3, 4.01 & 5.0 5.0	IBM
Freelance Plus	3.01	Lotus Corporation
IDMS PC (3)	2.4	Computer Associates
IDMS/ARCHITECT (3)	1.01	Computer Associates
Lotus 1-2-3	2.4,3.1+	Lotus Corporation
PFS:Professional File	2.X	Software Publishing Co.
R:Base for DOS	3.1	Microrim
SAS (for the PC)	6.04	SAS Institute
SPF/PC (3)	2.1	Command Technology Corp
Windows	3.1	Microsoft
WordPerfect	5.1	WordPerfect Corp.
ZipMail	1.21	Attachmate Corp.

- (1) Limited support microcomputer software products  
 (2) Sunset support microcomputer software products  
 (3) Special case microcomputer software products.

## APPENDIX D - Advisory Groups

### STATE DATA PROCESSING ADVISORY COUNCIL

October 15, 1991 through October 15, 1993

Department of Administration Robert L. Marks	Montana State Library Richard Miller
Office of Budget and Program Planning Steve Yeakel	Department of Natural Resources and Conservation Wayne Wetzel
Department of Commerce Andy Poole	Office of Public Instruction Scott Buswell
Corrections and Human Services Pam Joehtler	Department of Revenue Jack Ellery
Department of Family Services Jesse Munro	Secretary of State Doug Mitchell
Department of Fish, Wildlife, & Parks Allen Elser	Department of Social and Rehabilitation Services Mike Billings
Governor's Office John Kinna	State Auditor's Office Dennis Sheehy
Department of Health Bill Opitz	Supreme Court Jim Oppedahl
Department of Justice Mick Robinson	Department of Transportation Bill Salisbury
Department of Labor and Industry Mike Micone	University System Dr. David Toppen
Office of Legislative Auditor Scott Seacat	Legislature Representative Joe Quilici
Legislative Council Robert B. Person	
Office of the Legislative Fiscal Analyst Terry Johnson	

### STATE DATA PROCESSING MANAGEMENT GROUP

Department of Administration: Jeff Brandt	Legislative Fiscal Office Mary Longmaid
Tony Herbert Dave Marshall Sharon Ranstrom Paul Rylander Mike Trevor Joyce Walborn Martha Johansen	Legislative Fiscal Analyst Lois Steinbeck
Department of Agriculture Bob LaRue, Systems Analyst	Department of Livestock Carol Robocker
Department of Commerce Gary Wulf, D.P. Manager	Department of Military Affairs LTC Stanley Putnam
Department of Corrections & Human Services Jan Bouchee John Broderson	Department of Natural Resources and Conservation George Cawfield
Department of Family Services Pat Gaydos	Public Service Commission Gerry Chasse
Department of Fish, Wildlife & Parks Jim Herman	Department of Revenue Brenda Haseman
Governor's Office Steve Colberg Mary Jo Murray	Department of Social and Rehabilitation Services Ken Curtiss Art Pembroke
Department of Health Tripp Hammer	State Auditor's Office Dana Corson
Commissioner of Higher Education Paul Dunham	State Fund Judy Simpson
Historical Society Archives Ellie Arguibau	MT Supreme Court Gary Spears
Office of Public Instruction Scott Buswell	Department of Transportation Wayne Schaff Mike Randall
Department of Justice John Mathews	Helena Vo-Tech Center Ted Plaggemeyer
Department of Labor and Industry Kirsten Graham	State Library Jim Senkler
Legislative Auditor Mary Bryson	University System David Toppen
Legislative Council Henry Trenk	Secretary of State's Office Louise Ross

## **APPENDIX E - DATA SHARING RESOLUTION**

AUGUST 12, 1992

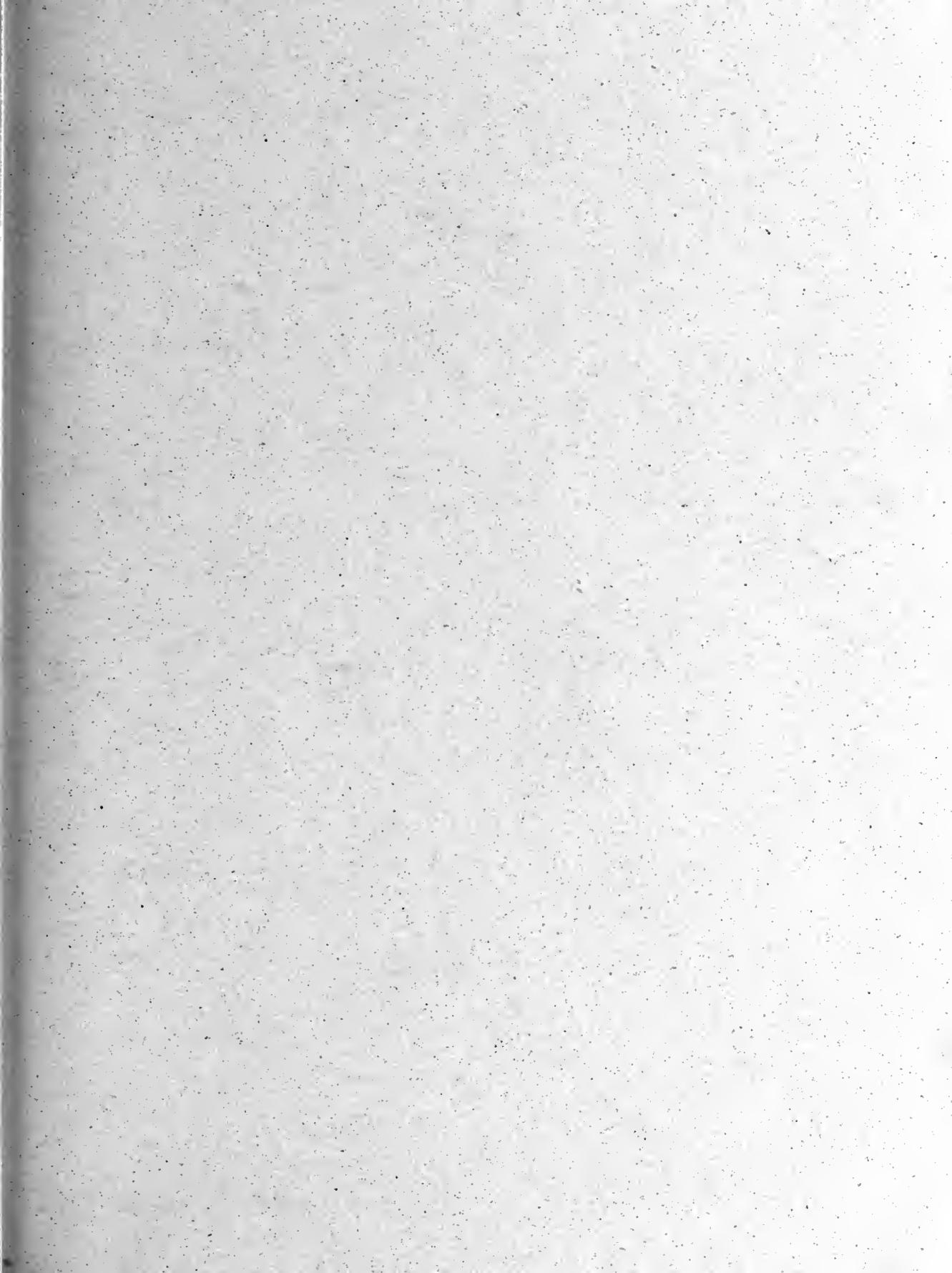
WHEREAS, a tremendous amount of electronic data is being maintained by state agencies, and;

WHEREAS, the duplication of electronic data will continue to increase if systems are developed without consideration for the sharing of data with other agencies, and;

WHEREAS, the cost of capturing, processing, and analyzing electronic data can be minimized for the state as a whole if more data sharing takes place between agencies;

NOW, THEREFORE BE IT RESOLVED by the Data Processing Managers' Group that it is a goal of state agencies to share data with other agencies whenever possible, if not prohibited by legal confidentiality requirements. Therefore, during major system development and enhancement projects, all state agencies should consider other agencies' automated systems in their design plans as an alternative to creating redundant data and/or systems within their own agency;

AND, BE IT FURTHER RESOLVED by the Data Processing Managers' Group that agencies should develop systems using software that meets compatibility criteria developed, with agency involvement, by ISD. The criteria should be developed with the purpose of ensuring that agencies acquire and use hardware and software that enable data to be shared among agencies.



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350 copies of this public document were published at an estimated cost of \$3.25 per copy, for a total cost of \$1135 which includes \$1135 for printing and \$0.00 for distribution.

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